88.5

AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

JANUARY 1, 1937

JAN 11 OREGON STATE AGRICULTURAL COLLEGE

Cotoneaster Divaricata

Organization—Let's Do Something About It!
More Plant Experiences of 1936
Fertilizers for Ornamental Plants

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

F. R. KILNER, Editor

Published Semi-monthly by

AMERICAN NURSERYMAN PUBLISHING CO.

508 S. Dearborn Street,
Chicago, Ill.

Telephone: Wabash 8194

New York Office—67 West 44th Street
N. L. Huebsch Tel., Murray Hill 2-4871

Entered as second-class matter December 14, 1933, at the post-office at Chicago, Ill., under the act of March 3, 1879.

SUBSCRIPTION PRICE, $1.00 per year; outside United States, $1.50. Single copies, 10c.

ADVERTISING RATES on application. Forms close on 10th of month for mid-month issue and on 25th of previous month for first-of-month issue. If proofs are wanted, copy should be on hand one week earlier.

EDITORIAL communications on subjects connected with nurseries, arboriculture or other phases of commercial horticulture are welcomed by the editor. Also articles on the subjects and papers prepared for conventions of nursery associations.

SB354
9A51
v.65-68
1937-38

HAPPY NEW YEAR!

So many readers have expressed their interest in this magazine during the past year that the contrast with the dispiriting depression years makes the change the more encouraging. As many comments came as notations with subscription renewals, advertising orders and remittances, so that no reply seemed required, the editor takes this opportunity to make one inclusive acknowledgment of these messages of good will and esteem. They are valued not only on that account, but because a number of them carried suggestions as to the contents of the magazine, services it could render, and the like. The latter should serve to make more effective this organ of the nursery industry. As that is its prime function, it may be added that nurserymen are invited to offer their criticisms and suggestions, and also their aid and contributions, to further the service this magazine can bring the industry and which the industry requires. So may there be further progress, and may all enjoy a happy and prosperous new year!

MAY HALT ROADSIDE WORK.

There appears to be danger that in the next session of Congress action will be taken to change the law which now requires that one per cent of the federal grant for highway construction in each state be devoted to the beautification of the highways. Senator Capper, of Kansas, in a recent radio speech indicated that he had been won over to the diversion of this money to secondary or "farm to city" highways. Without this federal grant, the roadside planting to be done henceforth would depend upon state expenditures, and a decided curtailment of the purchase of nursery stock for roadside work might result.

Continuation of highway planting is to be desired for other reasons than the direct benefit it has been to nurserymen through the sale of trees and shrubs. That also might be cited, as it has been the only form of aid which the federal government has given the nursery industry. The expenditure of federal money for road building as a relief project was advocated because of the large percentage of the total that went for labor; this is especially true in highway beautification work, which employs an even larger percentage of labor than does construction work. Highway beautification is also of educational value, both in the æsthetic enjoyment of the public and in the conservation of natural species of trees and shrubs. Roadside planting has also been found a safety factor on highways, not only by the protection of shoulders from erosion, but also by its effect upon drivers.

Moreover, the amount of money thus far spent on highway planting would add little to the actual construction of roads. In Senator Capper's own state of Kansas, the highway department purchased about $100,000 worth of stock for roadside planting in the past two years. This sum of money would about have built five miles of concrete road, including the preparatory work of the right of way. So it is obvious that few farmers would be closer to market if the money spent on highway planting had actually been devoted to the laying of more concrete.

If one needs more arguments for the continuation of roadside planting, he might refer to the review of J. M. Bennett's book, "Roadsides, the Front Yard of the Nation," in the December 15 issue. Perhaps wider distribution of that book will help Senators and Congressmen to see the value of this work.

Through garden clubs and local civic bodies, nurserymen should see that steps are taken to combat the proposed action in the coming session of Congress.

COTONEASTER DIVARICATA.

Many fine cotoneasters are available, but far too few are generally employed in landscape work. This is particularly true throughout the vast Great Plains region of this country. There appears to be no good reason why a number of the hardier forms should not be more planted. The tenderness of some species has probably placed the fear of winter loss of all kinds in the minds of many.

The spreading cotoneaster, C. divaricata, which is illustrated on the front cover, is one of the most attractive species and, fortunately, one of the hardiest. It can be used in the middle west at least as far north as Chicago, where it has withstood temperatures down to 30 degrees below zero during the past few winters. The prolonged severe cold spell early in the year just closing caused a little killing back of the tip growth on specimens in this area, but there was no serious injury. And after the dead tips were removed in spring, no disfigurement was apparent.

This deciduous shrub usually attains a height of five to six feet and a width of as much or more. The growth is quite twiggy, but the lustrous, dark green, oval leaves, about three-quarters of an inch long, often create the impression of a broad-leaved evergreen. The leaves turn red before dropping in autumn. Specimens in good health are normally covered with red fruits in autumn. This feature is the shrub's best bid for fame. The berries are ovoid and about a half inch long, persisting well. Give this cotoneaster a well drained alkaline soil in a sunny spot to see it at its best.

Seeds can be used for propagation, but their germination is extremely slow. L. C. Chadwick recommends stratifying them in moist peat for three to four months at a temperature of 60 to 75 degrees, then for the same period at 34 to 41 degrees. However, he states that treating the seeds with concentrated sulphuric acid for one and one-half to two and one-half hours can be substituted for

(Concluded on page 4.)

AMERICAN NURSERYMAN

[Registered U. S. Patent Office]

The Chief Exponent of the American Nursery Trade

The Nurseryman's Forte:
To Make America More Beautiful and Fruitful

VOL. LXV | JANUARY 1, 1937 | No. 1

Let's Do Something About It!

Pressing Problems of the Industry Requiring United Action Should Spur Completion of Plan for Large and Representative National Organization

Increased federal legislation affecting the nurserymen of the country—social security act, farm forestry bill, Robinson-Patman act, Jones-Patman bill, etc.—is but one of the reasons why the trade is actively realizing the need of a strong national organization to represent its interests, and indeed to protect them. On that account, the conference at Chicago, January 12, is of exceptional interest. State and regional nurserymen's associations throughout the country have been invited each to appoint a delegate to confer with the executive committee of the American Association of Nurserymen on the subject of reorganization, which has been before that body for several years.

Progress of Reorganization.

Over three years ago, Lester C. Lovett, then president, sought to obtain a formulation of the ideas of individuals inside and outside the A. A. N. desiring a change in organization and functions. The committee he appointed, composed of six A. A. N. members and six nonmembers, presented at the New York convention in 1934 the Costich plan, named for the chairman of the committee, which was a general announcement of policies to be followed in a revitalization program. The report was proclaimed a step forward, and a committee was appointed to devise the machinery of operation. That was more of a task than anyone realized and was yet uncompleted when the Cincinnati convention met in 1935. There the matter was referred to the executive committee of the national association, which went to work at it strenuously. John Surtees, whose work on nursery cost-finding has made him famous in the industry, drew up a detailed outline which the A. A. N. advisory committee revised into a more practical form, designated as the New York plan. Subsequently the executive committee, a year ago at Chicago, made other changes, resulting in the so-called Chicago plan. Both plans were published in the trade press, and comments were invited. Miles W. Bryant, in his presidential address at the Dallas convention, revealed the difficult problems faced and the great amount of work done in the preparation of these plans—without any comment at all being received as to the trade's choice! The matter was thereupon referred back to the executive committee, which has been striving to find that type of organization which will draw a large national representation to meet the pressing problems, like those of legislation referred to above. President Clarence O. Siebenthaler has called the conference at Chicago, January 12, in the hope that delegates appointed by state and regional associations throughout the country will present all the varying viewpoints. With the material on hand, a workable and attractive plan should evolve.

At the conference will be Philip P. Gott, manager of the trade associations department of the United States Chamber of Commerce. His address before the Council of Eastern Nurserymen, at New York last month, was regarded as the most instructive talk on trade associations that nurserymen have heard. The United States Chamber of Commerce has some 500 trade association members, in addition to about 16,000 individual members. Mr. Gott pointed out how trade associations function. The entrance of government into business in a number of directions, he said, makes it necessary for industries to organize their members in national associations, for representation at Washington and to meet other problems as they arise from time to time.

Need of Representation.

In the mass of legislation which must be considered by legislators in either state or national bodies, there is a great deal regarding matters with which they are personally unfamiliar. Therefore, hearings are held on proposed bills when interests affected by the legislation desire to present their views. In these hearings, sometimes informal and sometimes public in character, much can be done to determine the exact provisions of the resulting bill. Here is constant work to be done by the industry's representatives. Officers and committees of the A. A. N. have spent a great amount of time and frequently their own money in representing the entire industry, although the membership of their own organization has fallen to but a few hundred members. The demands currently being made on the industry by legislation were set forth plainly in the article by John K. Andrews in the December 15 issue, which deserved careful reading. To cope with these problems requires a well knit national organization and

funds for effective representation and action.

The form of national organization is most debated. Obviously, the ideal is that which would secure the representation of the greatest number. Probably that would be best accomplished by a union of state associations, inasmuch as the latter include many small nurserymen who might not easily be induced to join the national body directly. On the other hand, there is the more practical matter of funds, for state associations' dues are generally quite low. Perhaps it would be possible to prorate the national association's budget by states—after the fashion of the allotment set up by the Washington representative finance committee—and when any state association would annually provide its share of the budget, the individual members from that state in the national body would be released, inasmuch as they would be contributing through their state group.

Without any present obligation on the part of the state associations toward the national body, any action the former takes now must necessarily be voluntary. Without any state action, the national body is still one of individual memberships, and its acts toward other organizations can be only invitational.

Speaking for the good of the industry as a whole, and not for any group or section or individual interest in this matter, it is hoped that the state organizations will see that their representatives attend the meeting at Chicago, January 12. From their views there should emerge a proposal which the state associations will not only support, but take action to advance.

The policies of a national association are decided by the membership. To work out the problems of the industry requires funds. Both membership and funds should be held as the twin goals by those discussing a national organization or reorganization.

The need is recognized as urgent. Debate and discussion have covered several years. Let's do something about it now.

PRIVET THRIPS.

During the past six or seven years the privet thrips has become increasingly abundant and destructive to privet hedges. Winterkilling of Amoor river privet has occurred after seasons of heavy infestation, while uninjured portions of the hedge have survived. Lilacs are attacked to a lesser extent.

Experiments conducted have shown that this thrips can be effectively controlled with a single application of a nicotine-Penetrol or nicotine soap spray. Sweetened sprays, such as those used for the control of the gladiolus thrips, have injured privet. The nicotine-Penetrol spray is made up of one fluid ounce of forty per cent nicotine sulphate and two fluid ounces of Penetrol in three gallons of water. Three ounces of soap may be used in place of the Penetrol. The spray should be applied as soon as the thrips are observed on the foliage.

Overwintering thrips and adults of later broods feed almost entirely upon the upper surfaces of the leaves. Those in the immature stages feed to a great extent upon the lower surfaces of the leaves. If spraying is done before the young appear, it is necessary to spray only the upper surface of the leaves. When the young stages are abundant, it is necessary to spray the undersides of the leaves for best results.

CHEMICALS KILL BRAMBLES.

Experience with common methods of destroying wild brambles, such as clean cultivation, grubbing, mowing, burning and live stock grazing, has demonstrated their efficiency when properly managed, but in many situations, none of these means is expedient.

In experimentation with chemicals, the effective bramble eradicants proved to be ammonium sulphocyanate, both crude-liquor and crude-crystalline; sodium chlorate, and the proprietary chlorate mixtures, Atlacide and Vegecide, and sodium arsenite. Recommendations on the use of these materials have been evolved from the results of plant experiments and field trials with different rates, methods and seasons of application and from a general consideration of their chemical natures and plant toxicity. These are given in bulletin 674, just issued by the New York agricultural experiment station, Geneva, N. Y., on "Wild Bramble Eradication," by L. M. Cooley.

In comparison with the above materials, sodium chloride, kerosene, sulphuric acid, lime-sulphur, copper sulphate, ammonium sulphate, calcium cyanamide, sodium nitrate and sodium carbonate were found to have slight or no value in the destruction of brambles.

Of the several types of wild brambles, blackberries proved most resistant to all of the toxic chemicals. Purple or hybrid raspberries (a relatively rare species) were also quite resistant. Wild red raspberries (the most numerous species and the main objective of this work), black raspberries and dewberries, all succumbed readily to the action of effective materials.

Resistance to herbicides rose with increased vigor of bramble growth. A fine mist spray applied on the foliage proved to be the most effective method of treating brambles with herbicides. Methods less efficient in distributing the materials, such as dusting or sprinkling the foliage, and applications to soil surfaces instead of foliage, gave good results with the chlorates but not with ammonium sulphocyanate.

Brambles appeared to be most susceptible to applications of toxic materials when the treatments were made at about the time of fruiting in midsummer. At other times sodium chlorate was less effective, but still it was satisfactorily eradicative at every season of application, even winter. Ammonium sulphocyanate was appreciably less eradicative in spring and fall and noneffectual in winter treatments.

COTONEASTER DIVARICATA.

(Concluded from page 2.)

the warm period of stratification. He says that good results are also obtained by sowing the seeds in board-covered coldframes in early fall: Sow in flats—germination the second spring.

Cuttings of green wood can be rooted in sand with the aid of a little heat, or half-ripe wood can be used with sufficient bottom heat to stimulate root action. Often fairly long cuttings are taken in August and September and carried over winter in a greenhouse.

This cotoneaster, with its spreading slender branches and abundance of red fruits, is one of the handsomest and most satisfactory species for northern gardens.

Plant Experiences of 1936

Concluding Observations on the Behavior of Some Herbaceous Perennials During the Current Growing Season—By C. W. Wood

My experience with the genus phyteuma, which has been confined to perhaps less than half of the forty or more species, whets my appetite to see the remainder of them. And this, I am sure, will be the experience of every other gardener after he once is interested in this group of plants. Aside from two of the species, which will be pointed out later, there are no hard problems of culture to be solved and some of the lowland inhabitants are among the easiest of plants to handle. They belong to the campanulaceæ, carrying the blue which seems to be the predominating color of that order and offering a pleasing variation from the family which gives its name to the group. It will be necessary to go back beyond the experiences of 1936 to make a complete picture of the genus as it is known personally to me, but I believe the value of the group merits that deviation from the restrictions of our title.

Phyteuma Comosum.

Only two species that I have grown should cause trouble for any gardener. One of these, Phyteuma comosum, is perhaps only for the specialists. Experience here would indicate that to be true, at any rate, and examination of the literature on the subject shows that others also find it a refractory subject. I have had so little lasting success with the plant (even finding it difficult to propagate, let alone keep it in a thriving state for any length of time) that I shall have to fall back upon the advice of others. Practically all writers consulted are of the opinion that it needs a fissure in a sunny wall of limestone and a soil on the alkaline side. But even that does not permanently satisfy it here, more moisture at the roots than is commonly the case in a sunny wall being necessary to keep it going. Perhaps a wall that is subirrigated would answer the purpose, but as I do not have that convenient arrangement, I have tried the ubiquitous tin can, with a hole or two punched in the bottom, buried above the plant. That has not given permanently good results, however; so the problem is passed on to more ingenious workers. I think, though, that one weak link in the chain has been the effort to establish plants that were too large for safe handling. It naturally makes a system of thick fleshy roots, and it is practically impossible to get these into the narrow fissure demanded without irreparable injury. If small pot-grown plants were introduced into their permanent quarters just before the late summer rains commence, it might be possible to get them established before they are beset by the trying conditions of our summers. So much space has been taken in these preliminary remarks because the beauty of the plant and its value as a garden subject warrant far more than that amount of time and energy. It makes a tuft of jagged leaves and usually almost stemless umbels of lilac blue, darker-tipped flowers, the tube-like corollas resembling elongated pistils, giving the flowers a curiously beaked appearance. Its flowering period here in northern Michigan has generally covered a little more than a month, commencing in early June.

The only other plant that I have had which gave any trouble was P. hemisphæricum. I do not have it now, but shall try it again in 1937, giving it the moist, acid soil which a friend tells me it needs. It makes tufts of grass-like leaves, from which ascend 3-inch stems bearing tousled heads of blue, the shade being fairly dark and approaching violet, according to my limited experience, though some references in the literature call it pale blue. It is not unlikely that the species shows even more than that variation, for the Cyclopedia of Horticulture says it may be blue, white or yellowish. That disposes of the hard problems, as far as I know the genus, though P. pauciflorum, a 2-inch plant with violet blue flowers, is spoken of as being a delicate alpine, needing as much care as the next preceding.

Easier Species.

The small amount of space needed to dispose of the remaining species with which I am personally acquainted is no measure of their value to the gardener. It will probably not be necessary to describe all of them, rather grouping them according to their garden uses or cultural requirements. None should give even the casual gardener any trouble and all are of definite value, making a unique addition to the plant grower's line. P. Carestiæ, deep violet, which Bailey says is a form of P. humile; P. Scheuchzeri, deep blue; P. Sieberi, pale violet blue according to my notes, contrary to Bailey's statement of deep violet blue), and P. virgatum, violet, are all low-growing plants, none higher than six inches when in flower, and particularly suited for the wall or planted among rocks. In another group, composed of P. betonicæfolium, blue, eighteen inches high; P. canescens, pale blue, thirty inches; P. Halleri, deep violet, two feet; P. limonifolium, light blue, two feet; P. Michelii, deep blue, twenty inches, and P. orbiculare, a variable species, we have good material that is both easily grown and, at the same time, out of the ordinary.

I should like to take a little space for more extended mention of P. orbiculare and P. lobelioides, the latter a new experience here during the last two or three years. The first of these, as usually available in seeds, makes a foot-high plant with graceful balls of blue over a longer period than any other phyteuma of my knowledge, generally extending over two months or more, commencing in May. P. lobelioides is a splendid acquisition of recent years, which showed its value last summer when it went through the trying heat and drought without any attention. It has lithe, graceful stems up to eighteen inches, which are adorned with deep lavender stars during June and part of July.

All these phyteumas, with the exceptions noted, have been easy to grow from seeds after the manner of campanulas and other small-seeded plants. They may also be multiplied from divisions in spring if propagation of a particular plant is desired.

Ruellia Ciliosa.

I cannot refrain from mentioning Ruellia ciliosa at this time even though it is not new. It forced itself

on my attention anew last summer, when it gave of its large, lavender, petunia-like flowers during August and part of September despite all the adverse conditions of that period. And this was accomplished in the open field, where the plants could have no attention except cultivation. This is a plant for the masses, being easy to handle in any sunny well drained situation and blooming at a time when color is at a premium in the rock garden. Its height of less than a foot admirably fits it for the latter use, but it is equally at home in the border, particularly when it is grown in masses. It comes readily from seed in fall or spring, perhaps the first period being preferred, as frost action gives better germination.

New Saponaria.

Perhaps the outstanding achievement among new plants last year was the performance of a new saponaria. The plant appeared in a California garden among seedlings of S. ocymoides a few years ago and was thought then to be a hybrid. A correspondent of wide acquaintance among the soapworts recently referred to it as S. semperflorens nana, a name I have not been able to check in the texts at my disposal. I mention this fact to help identify the plant to readers when it first appears in trade channels. And when it does reach the latter stage, I am sure you will make no mistake by growing it, for this little soapwort is one of the most promising items of easy culture I have seen in a long time. Last winter here, with an abundance of snow and no long periods of really cold weather, was not a good test of its hardiness, but I should expect it to do as well as most others of its kind. The plant has made a restrained growth in my garden, scarcely exceeding three inches in height, not spreading as is the habit of S. ocymoides, and blooming continuously from spring until autumn. The flowers are somewhat similar to ocymoides except that they are a lighter and more pleasing shade of pink.

Scorzonera.

The genus scorzonera is a large one of perhaps more than a hundred species, the only one known to any extent in America being S. hispanica, which is the black salsify of vegetable gardens. S. rosea is a most exquisite little composite, reminding one of pale pink gerberas on 6-inch stems, shining above a small tuft of typical viper's grass foliage. There is said to be a darker-flowered form which is S. purpurea. The plant that prompted these notes is one I recently acquired as S. alpina, which may be a high alpine form of S. rosea, but can hardly be the S. pygmæa of the Atlas mountains, for no plant of that part of Africa which I now recall is hardy here. In any case, it has some of the silvery foliage of the latter and not a little of the beauty of flower which S. rosea justifiably boasts of. They are mentioned here with the hope that American growers will make them available to gardeners. They are apparently of easy culture in light, well drained soil in full sun and come readily from seeds.

PEACH TREE THINNING.

Peach-thinning experiments carried on in western New York in the seasons of 1935 and 1936 by Dr. H. B. Tukey and Prof. Olav Einset, of the New York state experiment station, at Geneva, show that the thinning operation should be timed with relation to the seasonal development of the fruit rather than by any set calendar dates and that the effectiveness of thinning will depend largely upon the vigor of the tree and the number of leaves per fruit rather than upon the even spacing of the fruit on the tree. These facts, together with other pertinent information on the results of these tests, will be demonstrated in an exhibit at the eighty-second annual meeting of the New York State Horticultural Society, at Rochester, January 12 to 15.

"Among other things, we have found that the peach grows in three strikingly different periods," says Dr. Tukey in commenting on these studies. "First, a rapid period of growth for about seven weeks after full bloom; second, a period of several days to several weeks when the peaches may make no increase in size, and third, a final rapid growth often designated as the 'final swell' just preceding fruit ripening. Thinning during these different stages results in markedly different effects upon the size and development of the fruits left upon the tree.

"In addition, we have found that the effectiveness of thinning depends a great deal upon the vigor of the tree and the number of leaves per fruit. For example, with say sixty to eighty leaves per fruit, the size of fruit will be large and the color exceptionally good, while with eighteen to twenty leaves per fruit, much of the fruit may be small and unmarketable and the color poor. Somewhere around thirty to forty leaves per fruit seems to be the desirable number for western New York orchards. These experiments place the emphasis in thinning not so much on an even spacing of fruits on the tree as on the total number of fruits which a given tree may be expected to develop properly, according to the vigor of the tree."

BUFFALO BERRY.

One of the gifts of the northern plains country to ornamental and fruit gardening is the so-called buffalo berry, Shepherdia argentea. It is native from Minnesota and Nebraska to near the northern limit of settlement in the prairie provinces of Canada. It is thus well adapted to drought, heat in summer and cold in winter, and is usually found on light and poor soil.

It transplants with difficulty, and this is perhaps the reason why it is not cultivated more abundantly. However, interest in it is awakening, writes Percy H. Wright, Wilkie, Sask., Canada, in Horticulture, basing his opinion on the amount of seed he has collected this year for various persons. Some say that it should be grown from seed in the place where it is to remain, but young shrubs will transplant, even in relatively dry soils.

This large shrub, or small tree, has silvery foliage and is thus of distinct value for color effects. It is taller, much more silvery in leaf, and has more usable fruit than the related species canadensis, of still wider distribution.

The fruit is red or amber, and occurs in dense clusters. It makes a delicious jelly. The name, according to Dr. N. E. Hansen, came from the custom of eating the berries as a sauce with buffalo meat in the early days. The chief obstacle to its wider use as a fruit plant is the slowness of collecting the berries among the long thorns. The fruit varies in size and quality, and perhaps eventually improvement work will give a large, sweet-fruited strain without the thorns.

Fertilizers for Ornamental Plants

Supplementary Article on Recommended Practices for Different Groups of Plants According to Soil Requirements—By L. C. Chadwick

Following the discussions of major fertilization practices which have occurred in two recent issues of The American Nurseryman, it may be well to add a few facts, perhaps more theoretical, but nevertheless important, concerning the essential elements; their influence on plant growth, symptoms of deficiency, sources of supply and the influence of soil reaction on their availability. All too frequently, it seems to me, fertilizers are applied with little thought of which essential elements are present and what their influence will be on plant growth. We can well ask ourselves if we understand the influence of soil reaction on the availability of these elements and, furthermore, if we can recognize deficiency symptoms of these elements. It is true that we have little reliable information regarding some of these questions, but it seems advisable to make a survey of the available information from time to time and bring our thoughts up to date. Certainly the progressive nurseryman is interested in all the facts he can obtain and it is with this thought in mind that the following information is presented.

The Essential Elements.

For the purpose of discussion, the essential elements may be divided into (a) the standard group and (b) the minor elements. It has been known for a long time that the standard group is composed of ten essential elements: Carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, calcium, iron, magnesium and sulphur. Nitrogen, phosphorus and potassium are present in all complete fertilizers and are the ones most often limiting to plant growth. Carbon, hydrogen and oxygen are normally, under outdoor conditions, present in sufficient quantities to assure satisfactory plant growth. Calcium, iron, magnesium and sulphur, especially iron and magnesium, may be deficient in certain soils, and to assure normal plant growth they must be added in the fertilizer application.

Considerable attention has been given in recent years to a number of the so-called minor elements. As a result of this work, two of these elements may be considered essential for plant growth, two others are probably essential, at least in small quantities, and some twelve others may be possibly essential under some conditions.

Boron and manganese may be considered the essential minor elements. Boron has been found lacking in highly acid soils, and in highly alkaline soils it seems probable that it is in some way locked up and rendered unavailable for the plants. Even though small quantities seem to be necessary, excessive quantities have caused injury to citrus and walnut.

Manganese may be deficient for normal growth in alkaline soils, whereby a characteristic chlorosis appears. In such plants the roots appear to be normal, but the top of the plant dies. This trouble may be overcome by applications of manganese sulphate. It has also been noted that excessive amounts of manganese may cause chlorosis similar to that caused by a deficiency of the element. Injury from excessive amounts may be reduced by ample applications of phosphorus. Small applications of manganese have improved the growth of blue lupines, soy beans, oats, spinach, beets, blueberry, buckwheat, tomatoes and a few other plants.

From recent tests it seems probable that copper and zinc are also essential for plant growth. Applications of copper to plants growing in peat and muck soils have increased growth in a number of cases. Much of this work has been done with vegetable crops, but it seems sufficient to denote its importance. Chlorosis of citrous plants has been cured by spraying or applying copper salts to the soil.

Some work with zinc would seem to show that it acts as a stimulant to the growth of certain crops, mostly cereals, and possibly prevents certain diseases such as little leaf of fruits. In face of these limited tests, more proof is needed to show that zinc is essential for the normal development of higher plants in general.

A considerable amount of work has been done with a number of other minor elements, notably aluminum, arsenic, barium, cadmium, chromium, cobalt, iodine, lithium, mercury, nickel, strontium and tungsten, but so far there is little proof that they are essential to growth except with a few specific plant types. For the time being, they may be considered as only possibly essential.

Influence of the Essential Elements.

Even though books have been written concerning the influence of the essential elements on plant growth, it is difficult to describe the exact nature of the reaction of some of these elements. It will possibly suffice here to make a few general statements.

Carbon, hydrogen and oxygen are all essential for the manufacture of carbohydrates, fats and proteins. Nitrogen, as we all know, stimulates growth and delays maturity. Some reports emphasize its stimulative effect upon the absorption of other elements, such as potassium. Phosphorus promotes rapid development, stimulates flower and seed production, hastens maturity and aids root development. Other investigations show its influence on cell division and the formation of chlorophyll. Potassium aids in the formation of starches and sugars and their transportation within the plant. Evidence would seem to show that it makes stems less brittle and succulent, hastens maturity and intensifies color. It is probably essential in the formation of protoplasm and increases disease resistance. Other tests show its importance in seed production.

Calcium favors the development of necessary bacteria and counteracts the toxic effects of certain combinations in the soil. It also functions in the transportation of starch, metabolic processes and the formation of the cell wall. It may function in the formation of nuclei and chloroplasts and, furthermore, is possibly necessary for the nourishing functions of magnesium and in the liberation of other elements such as nitrogen, phosphorus and potassium.

Iron is known to be necessary for the formation of chlorophyll, the green coloring matter of the leaf. It

is beneficial to the growth of some fungi and ferric oxide has been shown to promote the fixation of atmospheric nitrogen by soil bacteria. Iron is also essential to the processes of respiration. Magnesium functions in the formation of seeds, nucleoproteids and chlorophyll; cell division, and the transportation of phosphoric acid and facilitates the assimilation of sulphur and nitrogen. Sulphur is considered a constituent of plant proteins.

Considering the minor elements, boron is now considered essential for growth of meristematic tissues and has an inhibiting action on such diseases as heart rot, crown rot or dry rot of sugar beets. The germination of corn and the early growth of some fruits and vegetables have been benefited by the presence of boron. Manganese is necessary for chlorophyll manufacture, influences oxidation and increases yield. It has been found to be present in considerable quantities in the bark of some trees, for example, walnut. It may prevent chlorosis in some plants and may have an inhibiting effect on some diseases of oats and wheat. Copper aids in the amelioration of adverse soil conditions, prevents chlorosis in some plants and has been found to aid in the production of bloom on flax and seed production on barley. Zinc has been found to stimulate growth, inhibit certain diseases and play an essential part in certain metabolic processes and may aid in the precipitation of toxic substances formed by certain soil bacteria. Some evidence points to its influence in increasing chlorophyll production in some grains.

Little can be said at the present time regarding the influence of the other minor elements on plant growth. What evidence is available would lead to the following statements. Aluminum aids in the liberation of iron, but at the same time may be toxic in itself in highly acid soils. Arsenic has been shown to increase the frost resistance of young corn plants. Barium, lithium and strontium appear to exert some influence on metabolism, especially in sugar cane. Cadmium has stimulated growth of oats, rye, wheat and barley. Chromium and strontium have exhibited inhibitory action on some diseases of sugar cane. Cobalt and nickel are found in many plants and may act as catalytic agents of growth. Iodine stimulates growth and prevents some diseases of vegetable plants. Mercury has exhibited an inhibitory action on diseases such as potato scab and little leaf of fruits. Tungsten has been shown to exert some stimulative action on the early growth of some cereals.

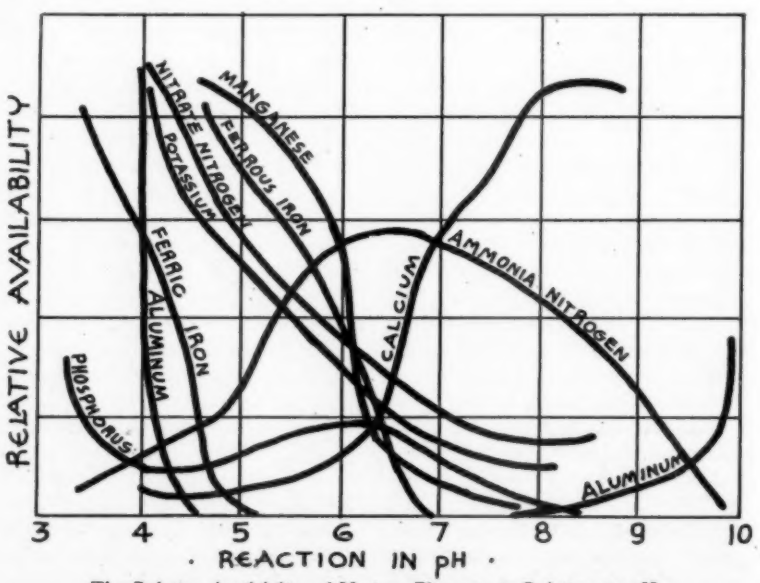
Symptoms of Deficiency.

Little evidence is available concerning the symptoms of deficiency of the major elements with ornamental plants. Further, there is no assurance that the deficiency of a certain element will give the same symptoms with different plants. Other growth factors will undoubtedly exert changes in plant characteristics. The following symptoms of deficiency, however, have been mentioned at one time or another.

Deficiency of carbon, hydrogen and oxygen is exemplified by the plant's having few and small leaves, but of good color. Nitrogen deficiency is shown in stunted growth, small leaves, yellow foliage, few new breaks, but usually little dropping of the leaves. Lack of phosphorus may give normal growth, but yellowing of the foliage, especially between the veins, or stunted growth with normal-size foliage, but leaves purplish and dropping early. With an absence of sufficient potash the growth is usually stunted and the leaves are yellow or mottled. The older leaves turn first and yellowing begins at the margins and continues toward the center. The margins later become brown.

Deficiency of calcium is difficult to detect. Generally poor growth occurs in highly acid soils showing lack of calcium. There is often death of the terminal bud, and dying of the tips of young leaves. The symptoms of deficiency of iron and magnesium are likewise difficult to detect, but there is generally a yellowing between the veins of the leaves (chlorosis), but otherwise, except in extremely severe cases, growth is nearly normal. Severe cases of chlorosis of pin oaks due to lack of available iron are shown by a die-back or stag-headedness of the branches and tops. No definite statement can be made regarding sulphur deficiency.

Lack of boron is expressed by depressed growth, distorted and chlorotic young leaves. These symptoms are less pronounced under short days. Definite stem and leaf lesions often appear. In tobacco, the tips of the leaves die and flowering is inhibited. The first symptom is a light green color at the base of young leaves. Manganese deficiency is shown by weak growth, chlorosis and poor flowering. Deficiency occurs in highly alkaline soils or those receiving high applications of lime. With some vegetables, such as tomatoes and cucumbers, the tops are first affected, the veins are green, but the rest of the leaves are yellow. Buds frequently turn brown and fall. Chlorosis, or yellowing of the leaves, is the only symptom of deficiency that can be



The Relative Availability of Various Elements in Relation to pH.

given for copper, zinc and aluminum. No definite information can be given for lack of sufficient quantities of the other minor elements.

Sources of Supply.

Information as to sources of supply may be best presented in lists giving the sources common in the trade, the analyses where possible, and the rates of application with some of the more important of the minor elements. Carbon, hydrogen and oxygen come from the air.

NITROGEN
(1) Organic:
Cottonseed meal 7-3-2
Tankage 8-10-0
Soy bean meal 6-5-6-1
Blood 14-0-0
Tobacco 3-0-10
Garbage Tankage 3-0-0
(2) Inorganic:
Ammonium sulphate 20%
Nitrate of soda 15%
Calcium nitrate 15%
Urea 46%
Cyanamide 22%

PHOSPHORUS
Superphosphate 16, 20 or 46% (20% most common)
Bone meal 3-22-0

POTASSIUM
Potassium chloride 50%
Potassium sulphate 48%
Wood ashes 4% (30-35% calcium)

COMBINATIONS
(1) Nitrogen-phosphorus
Ammo-phos 16-20-0 or 11-48-0
(2) Nitrogen-potassium
Potassium nitrate 13-0-44

CALCIUM
Calcium oxide (quicklime)
Calcium hydroxide (water slaked lime)
Calcium carbonate (air slaked lime)
Calcium sulphate (gypsum, land plaster)
Ground limestone

COMPLETE FERTILIZERS
(1) Common commercial grades:
2-10-10
2-12-6
4-12-4
8-5-3
10-6-4
(2) Trade name types:
Nitrophoska 15-30-15
Bonro 12-6-4
Wedo 8-5-3
Fairway 6-6-4
BloomAid 5-10-3
Loma 4-12-4
Sacco 4-12-4
Vigoro 4-12-4

IRON
Ferrous chloride
Ferrous sulphate
Ferric chloride
Ferric citrate
Ferric oxide
Ferric sulphate

SULPHUR
Sulphur dioxide (SO_2)
10 to 20 pounds added per year per acre by rainfall.
Sulphur trioxide (SO_3)

BORON
Boric acid—4½ to 9 pounds per acre.
Borax—10 to 20 pounds per acre.

MANGANESE
Manganese sulphate—50 to 150 pounds per acre.

MAGNESIUM
Magnesium sulphate

COPPER
Copper sulphate—30 pounds per acre. ¼ to 2 pounds per tree.

ZINC
Zinc sulphate—¼ to 15 pounds per tree.

Influence of Soil on Availability.

The study of soil acidity is comparatively new, and but few subjects have gained as widespread attention from investigators during the past ten or twelve years. Possibly overenthusiastic scientists seemed to have had the tendency of trying to explain most soil reactions and the behavior of plant growth on the basis of the hydrogen-ion concentration of the soil. There is a tendency at the present time to consider hydrogen-ion concentration as only one of the important factors of plant growth. It is not a cure-all explanation of all plant growth phenomena, as one might be led to think from various publications. Other influential factors, such as the colloidal nature of the soil, the biological activity therein and various other aspects, exert their influence.

Not so long ago, when growers sent samples of soil for analysis, tests were made for acidity alone, and recommendations were made accordingly. Analysis tests at the present time go much farther. The so-called essential elements—nitrogen, phosphorus and potash—are determined. Frequently, when possible, the quantity of these essential elements in the plant tissues is also determined. In many cases even some of the minor elements, such as aluminum, calcium, chlorine and sulphur, in the soil are determined. The content of organic matter is noted, and with all of these conditions in mind fairly accurate recommendations can be given. It is advisable for the average nurseryman to have these tests made, since he then will have an idea of what is needed, and fertilizer applications may be made accordingly. Many of these tests can be made in the field with fairly reliable results; laboratory determinations may be substituted or made in addition where necessity demands.

Before offering some data of the influence of soil acidity on the availability of the essential elements, it may be well to elucidate briefly some of the terms used in discussing this subject. Soil acidity is a condition where the basic elements such as calcium, magnesium, sodium and potassium become soluble and are leached away or absorbed by the plants, leaving behind the iron, silicon and aluminum with which they were combined. Acids of these elements, when dissolved in water, become dissociated. Positive hydrogen ions result from the reaction. The greater the number of these hydrogen ions in a given volume of solution or, in other words, the greater the hydrogen-ion concentration, the more intense is the acid reaction of the solution. Hydrogen-ion concentration is expressed in terms of pH, a numerical expression which denotes the logarithm of its reciprocal. An acidity-alkalinity scale can be arranged in terms of hydrogen-ion concentration with the numerical value of pH 7 representing a neutral reaction. Any pH number from 0 to 7 indicates an acid solution, with decreasing acidity as the number increases. Any pH number from 7 to 14 indicates an alkaline solution with increasing alkalinity as the number increases. The true value of the pH reading is rather hard to visualize, since the hydrogen-ion concentration of pH 5 is ten times as great as that of pH 6.

Much of the work with soil acidity has dealt with its influence upon the availability of the various nutrient elements. It should be understood that acidity is not the only condition of the soil that regulates the availability of nutrient elements; thus different investigators disagree on the reactions occurring. The accompanying chart has been prepared to indicate the possible effect of acidity upon the availability of various salts. Experimental work of various scientists is the basis for the curves given. They should not be taken as being exact in their relationship to one another, but they are indicative of the relative availability. We may discuss briefly the availability of the different elements.

Aluminum is highly soluble at pH 4.0, drops rapidly as it approaches pH 4.5 and is negligible thereafter. Curiously enough, however, it becomes soluble at about pH 7.8 and increases rather rapidly above pH 9.6. Often the thought is expressed that aluminum may become toxic to plants when used as an acidifying agent. There is probably little likelihood of this under most conditions. Since aluminum is not, or only slightly, soluble between pH 5.0 to 8.0, no damage may be expected within this range. Experiments have also shown that ample quantities of available phosphorus will reduce possible injury from aluminum. Calcium is slightly soluble at pH 4.0, 5.0 and 6.0, but then increases rapidly at pH 7.5 to 8.0, reaching a maximum at about pH 8.2. Magnesium, not shown on the chart, shows an availability curve similar to that of calcium. The

availability of iron depends upon the nature of the salt. Ferrous salts are available at pH's lower than 6.7, while ferric salts are readily available only at pH's lower than 4.6. Manganese is readily available at pH's lower than 6.5. Some believe that its maximum solubility is at pH 5.8 to 6.0, others at about pH 4.5 to pH 5.0.

Considerable difference exists concerning the relative absorption of nitrogen. From recent work conducted at the New Jersey experiment station this would seem to depend upon the hydrogen-ion concentration, availability of carbohydrates and the rate of assimilation within the plants. The results of these experiments indicate that the nitrate ion was assimilated most satisfactorily in the plants used when absorbed from a nutrient solution of approximately pH 4.0. The ammonium ion was assimilated most satisfactorily when absorbed from a nutrient solution having a constant pH value of 5.0 to 6.5. Plants growing on soils containing both ammonium and nitrate salts absorbed both. The assimilation of them depended somewhat upon the pH of the soil. With soil of pH 4.0 plants accumulated ammonium and assimilated nitrate ions. In neutral or slightly alkaline soils plants accumulated nitrate ions and assimilated ammonium. A large amount of available carbohydrates favored the ammonium assimilation. A realization of this difference in assimilation of nitrate and ammonium salts is an aid in explaining favorable fertilization practices with ericaceous plants. Here nitrogen supplied in a slowly available form of ammonia is most satisfactory.

Phosphorus is apparently quite highly available at pH 3.5, is less at pH 4.0 and 5.0, then increases at pH 6.0 to 6.5, followed by a rapid drop to pH 8.0. The curve for potassium is nearly a straight line, the solubility decreasing steadily from pH 4.5 to 8.0.

Considering the elements as a group, the striking fact is that an acid reaction is necessary for adequate solubility of all except calcium and possibly potassium and aluminum. It would seem that a reaction of the soil between pH 5.5 and 6.5 was the most favorable to maintain. The time is coming when most fertilizer needs will be determined by analyses of the soil and plant tissues. Many of the soil tests on the market at the present time can be used satisfactorily by nurserymen if contamination of the test solutions is avoided. Most state universities and experiment stations offer this soil-testing service free of charge to nurserymen.

ILLINOIS ROAD PLANTING.

In the past three years, since highway planting was begun, an average of $400,000 annually has been expended for this work in the state of Illinois, according to Al. Gries, chief landscape architect of the state highway commission, at Springfield. Illinois now has about 3,000 miles of highway planted, at a cost of from $500 to $800 per mile. Downstate work is confined to highways at least eighty feet wide, while in Cook county most of the projects are along 100-foot roads. The latter work is being directed by Kendrick Harger, district engineer of the highway commission at Chicago, and by Clifford G. Petrie, his landscape expert.

MINNESOTA OFFICERS.

When the retiring president of the Minnesota State Nurserymen's Association called the incoming president to the chair at the convention at St. Paul, December 15, the camera man of a local newspaper took the photograph reproduced on this page, which includes R. D. Underwood, of the Jewell Nursery Co., Lake City, new president, who is standing, and Bj. Loss, of the Lake City Nurseries, Lake City, the retiring president, seated at his right, and W. T. Cowperthwaite, of Holm & Olson, Inc., St. Paul, who continues as secretary, seated at the left and apparently continuing without interruption his transcription of the proceedings.

Officers of Minnesota State Nurserymen's Association.

OUTSTANDING HELIOPSIS.

For a long time we have felt the need of a heliopsis with a graceful flower and a clear yellow color. Although the common H. scabra and zinniæflora are welcome during the hottest part of the summer, when not many flowers are really good, their colors are not clear enough to give perfect satisfaction.

After trying out many varieties, we have come to the conclusion that Heliopsis scabra Incomparabilis is a valuable addition to the list of worthwhile perennials.

It produces large semidouble flowers with broad florets of a superb chrome yellow. The flowers are graceful and of an extremely pleasing color; they last well after cutting. At the summer meeting of the Michigan Florists' Association this plant was voted an award of merit, while it also has to its credit an award of merit from the Royal Horticultural Society of England.

Heliopsis scabra Incomparabilis bloomed here at Lansing, Mich., from early summer until frost.

The Cottage Gardens.

NOTES OF THE TRADE

ARTHUR FLANNAGAN is the new manager of the Allendale Nurseries, Allendale, N. J.

THE Harold Crossley Nursery is the successor to Kirkman's Nursery, at South Gate, Cal.

BRADFORD BURNHAM has sold out his share in the Chebacco Nurseries, Essex, Mass., to his partner, Theodore Burnham, and has gone to Florida.

THE Omaha (Neb.) Association of Nurserymen recently indorsed a city ordinance proposal that Omaha trees be trimmed by licensed tree surgeons.

LEONARD DOW, Gratton, Cal., has moved his nursery from the Linbeck ranch to Turlock, Cal., where he has a 3-year lease on property and where he has erected a lath house.

FIRE believed caused by a defect in an electric stoker destroyed several greenhouses of the D. S. George Nurseries, Fairport, N. Y., December 19. Loss was reported to be estimated at $10,000.

A NURSERY which will be operated by F. J. Pierce is under way at a corner of Seventh and I streets, Grants Pass, Ore. Mr. Pierce will work in connection with the Park Landscaping Co., Rogue River.

A NEW office and salesroom have been built at the Sherman Oaks Nursery, Sherman Oaks, Van Nuys, Cal. The proprietors, Paul and Wesley Pack, have been engaged in the nursery business for the past ten years.

F. J. COUGHLIN, 5471 Kenmore avenue, Chicago, Ill., will operate a nursery, starting this spring, at Paw Paw, Mich., with a general line of evergreens and perennials. Formerly, until 1931, he was in the nursery business in Herkimer county, N. Y.

THE Santa Cruz Sentinel recently published a lengthy article about the Pine Hurst Nursery, Santa Cruz, Ca., operated by Mr. and Mrs. Elmer Carr. In it was told how the achievements of the Carrs were also written up in a recent issue of Sunset Magazine.

AS THE first step in a major plan of beautification for Menlo Park, Cal., the city council recently approved the purchase of 200 trees from Thomas Stentiford, of the Menlo Park Nurseries. Mr. Stentiford agreed to furnish, plant and maintain the trees for three years at a cost of $2.50 each.

THE Saunderskill Nursery, Accord, N. Y., has won the bid for the roadside project in Sullivan county, N. Y., as well as for landscaping route 17 between Bloomingburg and Monticello, N. Y.

MUCH interest is expressed by orchardists in the new Hardee peach, and many inquiries are received, according to Don Byers, of the French Nurseries, Clyde, O. Production is yet limited on this patented peach.

ON TWO state highway improvement projects, Grand View Nurseries, Inc., Mount Vernon, N. Y., was low bidder recently. The projects were the Kirkwood River highway in Broome county and the Mechanicville-Malta highway in Saratoga county, N. Y.

"PAINESVILLE NURSERIES"

THE STORRS AND HARRISON CO. TREES PLANTS SEEDS PAINESVILLE, OHIO. ESTABLISHED 1854 TRADE MARK

Complete Nursery Supply

Our supply is adequate, in quality stock, covering these important departments:

Fruit Trees
Deciduous Trees
Evergreen Trees
Shrubs
Vines
Evergreen Shrubs
Roses
Small Fruits
Hardy Perennials
Greenhouse and Bedding Plants
Bulbs and Tubers
SEEDS

82nd Year of Dependable Service

The Storrs & Harrison Company
PAINESVILLE, OHIO

CHINESE ELM SEEDLINGS

Hardy, Northern strain. Well matured, good roots, carefully graded and stored. Priced on a fair competitive basis. Carload rates to most eastern points.

MILTON NURSERY CO., Milton, Ore.

THE Judge Nursery Co., Tyler, Tex., has been incorporated for $2,000 by E. W. Judge, Mrs. Ruby C. Judge and Ernest Daugherty.

AUGUST KNODT is the new manager of the Leash Nursery, Nice, Cal., taking the place of Van Vleit, who has accepted a position in the bay district.

HAVING already donated 35,000 hollyhock plants as his contribution to Cape May county beautification work, E. A. Wohlert, South Dennis and Narberth, Pa., nurseryman, has also presented the county with 1,500 flowering trees, which will bloom next spring.

THE city council at Santa Monica, Cal., recently approved a conditional exception to the zoning ordinance whereby a nursery and greenhouse may be established on the southwest corner of Stanford street and Colorado avenue, Santa Monica, by Mable and Albert Straszacker.

BLUEBERRIES

Best known varieties. Prices right. Direct service to your customers. Write for details.

HOUSTON BLUEBERRY NURSERY
Hanover, Mass.

WILLIAM A. NATORP, Cincinnati, O., was recently named to head the organization which will stage the 1938 Greater Cincinnati flower show.

THE La Brea Nursery & Pottery Yard, Los Angeles, Cal., have purchased land and erected greatly enlarged quarters, according to Marvin Steiner, owner.

L. W. WUEST, who reports business at the Sharondale Gardens, Nashville, Tenn., more rushing than in many years, is adopting a new cash-and-carry plan for his nurseries.

Coming Conventions

ON THE CALENDAR.

January 4, Long Island Nurserymen's Association, annual meeting, Bethpage Country Club, Farmingdale, N. Y.

January 5 to 7, Western Association of Nurserymen, annual convention, Hotel President, Kansas City, Mo. The annual meetings of the Kansas and Missouri state organizations will be held at the same time.

January 7, Nebraska Nurserymen's Association, annual meeting, Cornhusker hotel, Lincoln.

January 12, Massachusetts Nurserymen's Association, annual convention, Hotel Statler, Boston.

January 13 and 14, Illinois State Nurserymen's Association, annual meeting, Hotel La Salle, Chicago.

January 15 and 16, Michigan Association of Nurserymen, annual convention, Olds hotel, Lansing. Sessions will be held at Michigan State College, East Lansing.

January 18 and 19, Ohio State Nurserymen's Association, winter meeting, Deshler-Wallick hotel, Columbus. The annual nurserymen's and landscape gardeners' short course at Ohio State University, Columbus, follows, on January 20 to 22.

January 19, North Carolina Association of Nurserymen, midwinter meeting, Hotel Charlotte, Charlotte.

January 20, New York State Nurserymen's Association, annual meeting, Seneca hotel, Rochester.

January 20, Connecticut Nurserymen's Association, annual meeting, Garde hotel, Hartford.

January 25, Association of Kentucky Nurserymen, annual meeting, La Fayette hotel, Lexington, Ky.

January 26 and 27, Tennessee State Nurserymen's Association, annual convention, Hotel Hermitage, Nashville.

January 26 and 27, New England Nurserymen's Association, annual convention, Hotel Statler, Boston, Mass.

January 28 and 29, New Jersey Association of Nurserymen, Trenton.

February 11, Wisconsin Nurserymen's Association, annual convention, Republican hotel, Milwaukee.

TO MEET AT HARTFORD, CONN.

The Garde hotel at Hartford, Conn., will be the scene of the annual meeting of the Connecticut Nurserymen's Association Wednesday, January 20. The session will start at 10 a. m.

Speakers will be Dr. W. O. Filley, forester of the Connecticut agricultural experiment station, who will give an illustrated lecture on "State Parks," and Lester W. Needham, Westfield, Mass., who will talk on "Merchandising Nursery Stock." The meeting will close with a dinner and entertainment.

Peter Cascio, Sec'y.

ON MASSACHUSETTS PROGRAM.

Among the leading speakers at the annual meeting of the Massachusetts Nurserymen's Association at the Hotel Statler January 12 will be Dr. Donald Wyman, of the Arnold Arboretum; William H. Judd, from the same institution; J. V. McManmon, director of roadside beautification projects for Massachusetts; George Graves, of the Waltham station of the Massachusetts State College, and Donald D. Wyman, North Abington, who will discuss the work being done by the newly organized Eastern Nurserymen's Council.

NORTH CAROLINA MEETING.

The midwinter meeting of the North Carolina Association of Nurserymen will be held at the Hotel Charlotte, Charlotte, N. C., Tuesday, January 19. The program will be entirely informal and no talks will be made except those discussing in an impromptu way such subject matter as may be presented. The meeting will begin at 1 p. m. and last one day. An executive committee meeting will be held at the hotel the previous night at 8 o'clock.

The next annual meeting of the association will be held over a 2-day period in July at Wrightsville Beach, N. C.

Officers of the association now are L. R. Casey, Goldsboro, president, and Dr. R. W. Leiby, Raleigh, secretary and treasurer.

PROGRAM AT CHICAGO.

The second week in January will see a large gathering of nurserymen at Chicago. The executive committee of the American Association of Nurserymen will meet at the La Salle hotel, January 12, and will hold a conference with the delegates of state and regional organizations to discuss the subject of reorganization. That in itself should bring a considerable group to Chicago.

January 13 and 14, the Illinois State Nurserymen's Association will hold its twenty-first annual meeting, at the La Salle hotel, and the exceptionally interesting program will no doubt draw a large attendance. The list of speakers and subjects, as announced by Secretary Miles W. Bryant, appeared in the December 15 issue. In addition, it is now announced that the speaker at the luncheon on the second day will be Philip P. Gott, manager of the trade associations department of the United States Chamber of Commerce. His talk before the Council of Eastern Nurserymen, last month, was regarded as an exceptional exposition of trade association organization, and his remarks at Chicago will be a matter of great interest.

The sessions of the convention will occupy only the afternoons of the two days, though a special session may be called on the morning of the second day on highway matters. The program follows:

WEDNESDAY, JANUARY 13, 1:30 P. M.

Opening business, including president's address, official reports and committee appointments.

"Federal Laws and Rulings as They Affect the Nursery Industry," by Lester C. Lovett, Little Silver, N. J.

"Modern Sales Promotion," by R. R. Cunningham, director of sales promotion, La Salle Extension University, Chicago.

"The Morton Arboretum," by C. E. Godshalk, superintendent, Lisle, Ill.

THURSDAY, JANUARY 14, 2 P. M.

Address by Clarence O. Siebenthaler, Dayton, O., president of the American Association of Nurserymen.

"Current Inspection Problems in Illinois," by H. F. Seifert, chief plant inspector, Illinois state department of agriculture, Urbana.

"New Practices in Propagation," by L. C. Chadwick, Ohio State University, Columbus.

"Summer Merchandising of Nursery Stock," by Kenneth Haysler, Kansas City, Mo.

Executive session and concluding business.

OHIO COURSE FOR NURSERYMEN.

Following is the program for the eighth annual short course for nurserymen and landscape gardeners, which will be held at the Ohio State University, Columbus, January 20 to 22. The meetings are scheduled for the Horticulture and Forestry building. A registration fee of $1 will be charged:

JANUARY 20, 8 A. M.

"Propagation, Culture and Choice of Hardy Chrysanthemums," by G. H. Poesch, department of horticulture, Ohio State University.

"The Plants I Obtain from Nurserymen," by Harold Esper, department of buildings and grounds, Ohio State University.

JANUARY 20, 1 P. M.

Symposium on roses, with Prof. Alex Laurie as discussion leader.

"Propagation and Field Culture," by Gerard K. Klyn, Mentor, O.

"Roses of the Future."

"Choice of Present-day Varieties," by Robert Pyle, of the Conard-Pyle Co., West Grove, Pa.

"What the Client Expects from Nursery-grown Roses," by Wilber Stout, Columbus, O.

"Planting and Maintenance in Gardens," by Robert Bryden, superintendent, Prentiss estate, Cleveland Heights, O.

JANUARY 20, 7:30 P. M.

"Horticulture of the Future," by J. H. Gourley, department of horticulture, Ohio State University.

"Growth Conditions for Ericaceous Plants," by Richard P. White, New Jersey agricultural experiment station, New Brunswick.

JANUARY 21, 8 A. M.

"New Practices in Propagation; a Review of Recent Experimental Work," by L. C. Chadwick, department of horticulture, Ohio State University.

"Growth-promoting Substances As Aids in Rooting of Cuttings" (illustrated with slides furnished by P. W. Zimmerman, of the Boyce Thompson Institute for Plant Research, Yonkers, N. Y.), by G. H. Poesch.

"Ornamental Plant Diseases," by Richard P. White.

"Nursery Organizations," by Clarence Siebenthaler, Dayton, O., president of American Association of Nurserymen.

JANUARY 21, 1 P. M.

Symposium on taxus, with L. C. Chadwick as discussion leader.

"Propagation," by M. P. Sebian, of the M. P. Sebian Nurseries, Painesville, O.

"Transplanting and Culture in Beds," by Alfred Block, of the W. A. Natorp Co., Cincinnati, O.

"Trimming, Pruning and Field Culture," by John Siebenthaler, of the Siebenthaler Co., Dayton, O.

"Choice of Varieties and Their Use in Landscape Plantings," by C. E. Kern, of the Wyoming Nurseries, Wyoming, O.

JANUARY 21, 6:30 P. M.

Dinner.

"Oriental Poppies" (illustrated), by John Siebenthaler.

"Interesting Gardens I Have Seen" (illustrated), by Victor H. Ries, of the department of horticulture, Ohio State University.

JANUARY 22, 8:30 A. M.

"Results of Experimental Work at Ohio State University During 1936," by L. C. Chadwick.

"Why Not a Plant Doctor?" by Prof. Alex Laurie.

"The Influence of Insecticides and Fungicides on the Plant; Compatability of Spray Materials and Insect Pest Control," by Dwight DeLong, department of entomology, Ohio State University.

HEAD PENNSYLVANIA GROUP.

Louis Wissenbach, Pittsburgh, Pa., was elected president of the Western Pennsylvania Nurserymen's Association at a meeting held at the Fort Pitt hotel, Pittsburgh, December 11. Other officers elected were: Vice-president, H. Hoechstetter, Wilkinsburg; treasurer, R. Elliott, Evans City, and secretary, M. W. Hinn, Sewickley. The principal speaker at the meeting was Dr. A. F. DeWerth, of the Pittsburgh park department.

T. W. HILLIN, associated with J. R. Randolph in a nursery at San Angelo, Tex., for the past year, is opening a branch at Eighth and South Bridge streets, Brady, Tex. Mr. Randolph will remain in charge at San Angelo.

THOMAS CLAYTON, JR., recently opened a nursery at Nelson street and the Borger highway, Pampa, Tex. Formerly associated with his father in a florists' business at Pampa, Mr. Clayton took over the nursery activities of the firm and will handle a complete line of plants and shrubbery suitable for the panhandle.

New Rose
TEXAS CENTENNIAL
(Red Hoover)
Plant Patent No. 162

Ask for color illustration and prices.

Also for our general list of roses.

DIXIE ROSE NURSERY
Tyler, Texas

ROSES! ROSES!
TWO CARLOADS!

If you are interested in buying one or more carloads of Roses, write

TROUP NURSERY COMPANY
Troup, Smith County, Texas

We have two carloads of extra fine Roses, covering 60 varieties. We can also supply local shipments.

Write immediately.

ROSES

Hardy, two year, field-grown budded stock. Finest stock ever grown.

Write for List.

Lang Rose Nurseries
Box 702-A, Tyler, Texas

EVERGREENS
For Seventy years growers of Quality Evergreens
Lining Out Stock a Specialty
Write for Trade List
EVERGREEN NURSERY CO.
Established 1864 : STURGEON BAY, WIS.

HILL'S EVERGREENS
Complete assortment of lining-out sizes
Also larger grades for landscaping
Send for our wholesale catalogue
D. HILL NURSERY CO.
EVERGREEN SPECIALISTS
Largest Growers in America
Box 402 DUNDEE, ILLINOIS

HARDY AZALEAS
Kaempferi, Poukhanensis, Schlippenbachii, Mucronulata, Vaseyi, Enkianthus Camp., Juniperus Rigida, Taxodium Dist., White Spruce, Norway Spruce, Austrian, Limber Pine. Specimen Yews. 12 to 15-foot spread.
Send Want List
BRIMFIELD GARDENS NURSERY
245 Brimfield St., WETHERSFIELD, CONN.

Asparagus Roots
We offer to the trade one of the largest plantings of 1 and 2-year roots in the east. **Write us for prices.**
E. W. TOWNSEND & SONS NURSERIES
Salisbury, Maryland

IOWA NURSERYMEN ELECT.

H. S. Welch, vice-president of the Mount Arbor Nurseries, Shenandoah, Ia., was elected president of the Iowa Nurserymen's Association at the annual meeting of the organization at the Kirkwood hotel, Des Moines, December 18. Mr. Welch succeeds Harry E. Russell, Des Moines, who presided at the one-day convention. Other officers elected were: Vice-president, Andrew Ver Ploegh, Pella, and secretary-treasurer, C. C. Smith, Charles City.

Prof. B. S. Pickett, of Iowa State College, Ames, was one of the principal speakers at the session. Another was Louis Schneider, Des Moines, who explained various features of the social security act at a luncheon held at noon.

COLORADO MEETING.

Meeting at the W. W. Wilmore Dahlia Farm, Denver, the Colorado Nurserymen's Association last month passed a resolution opposing the Clark-McNary act and indorsing the introduction at the January session of the Colorado legislature acts to provide for giving nurserymen a mechanics' lien against property for unsettled accounts, securing reciprocity agreements with states adjoining Colorado as regards trucking licenses and establishing more rigid state inspection laws.

Also indorsed was the recently drafted city ordinance for the protection of trees and shrubs in Denver. After the heavy September snowstorm, according to the city forester, hundreds of Denver's finest trees were ruined by inexperienced trimmers. So the new ordinance was drafted to require all persons engaged in planting, trimming, spraying or removing trees to qualify before being granted licenses, which are revokable. A fee of $5 the first year and $3 thereafter is provided for. Samples of all chemical solutions used for spraying trees, shrubs and other plants must be supplied the city forestry department for analysis before they may be used.

DISCUSS AZALEA DISEASE.

The Eastern Nurserymen's Association held a special meeting at the Hotel New Yorker, New York city, last month, to act in regard to the azalea flower blight disease. About two dozen were present. J. Howes Humphreys was chairman. The discussion was opened by Julian J. Chisolm, secretary of the Maryland Nurserymen's Association, who read a resolution prepared by his organization and sent to other bodies in the northern states.

The disease first appeared in gardens in Charleston, S. C., in 1931, but little or nothing is known about it, according to Dr. Richard White, of the New Jersey agricultural experiment station. It was decided that the following, as members of the association quarantine committee, should seek an audience with the chief of the bureau of plant industry at Washington: Robert Brown, chairman; Eugene Boerner, Lester C. Lovett, L. C. Bobbink and Julian J. Chisolm.

There was some comment on the unfairness of the Japanese beetle regulations, and it was decided that the quarantine committee contact the head of the Japanese beetle bureau.

The annual meeting of the association will be held either February 3 or 10, probably at Trenton, N. J.

"J & P" ROSE NOVELTIES

ASK FOR NEW ROSE BROADSIDE
in four colors
showing
1936 NOVELTIES
and announcing
NEW LIBERAL GUARANTEE PLAN
on
Nationally Advertised Varieties
JACKSON & PERKINS CO.
Newark, New York State

PRIVET and BERBERIS
Splendid Stock
Write for Special Quotations
LESTER C. LOVETT
Milford Delaware

Burr's Quality Forcing Roses
Heavy branched, well rooted, excellent quality. Large list of varieties.
$3.00 per 10, $25.00 per 100
C. R. BURR & CO., INC.
Dept. A Manchester, Conn.

Princeton Nurseries
of PRINCETON, N. J.
SUPERIOR
Hardy Ornamentals

LINING-OUT STOCK
Connecticut Valley Grown
Seedlings - Rooted Cuttings
Evergreen and Deciduous
Write for List
C. E. WILSON & CO., INC.
Manchester, Connecticut

Canterbury Boxwood
Buxus suffruticosa and B. sempervirens.
Selected uniform plants; bushy and foliaged to center; masses of fibrous roots. Finished specimens from 4 inches up, ready for quick shipment. Prices lower, plants larger. Ask for special list.
CANTERBURY, Box A, Easton, Md.

Reviews of New Books

EVERGREEN BOOK FROM HILL'S.

In 1855, the D. Hill Nursery Co., Dundee, Ill., was founded, specializing in the propagation and growing of evergreens. During the eighty years that have followed, the name of the firm has become synonymous with this group of plants. It is quite natural, therefore, that through Hill's there should ultimately come a book of more than ordinary interest and usefulness on evergreens. This contribution is "Hill's Book of Evergreens," just issued.

Author of the work is L. L. Kumlien, long associated with the firm in charge of sales promotion. In Hill's catalogues and other booklets, Mr. Kumlien has already shown his literary qualifications, as well as his broad knowledge and a desire to increase planters' enjoyment of evergreens. Much of the material which has appeared in the many Hill publications in the past is reassembled in this new book, along with considerable additional data. Twenty years' daily experience answering questions about evergreens largely determined the nature of the text, it is stated in the foreword. It is not intended to be a botanical or scientific study of evergreens.

There are four sections in the book. The first part deals with the geological and historical background of evergreens and presents the various families. Section 2 contains the cultural information. Section 3 tells of the uses of evergreens and of the proper selection of trees for various needs. In section 4 appear the illustrations and descriptions of the leading hardy evergreens. Altogether there are fifty chapters.

Thirteen chapters deal exclusively with the use of evergreens, as in screens, hedges, outdoor living rooms, foundation plantings, etc. In this section there are seventy-four drawings and half-tones, many original ones, with plans and other specific and detailed instructions for the proper selection of evergreens for any landscape need.

The subject of propagation in its various aspects is well handled and illustrated. Of particular merit is the 11-page chapter on pruning, illustrated with twenty-two drawings and half-tones. Finally, to each of nine evergreen families a separate chapter is devoted.

Showing the scope of the work are such chapter headings as "Poetical Tributes to Evergreens," "Color in Evergreens," "Evergreen Seed Collecting," "Peat Moss—What It Is and Does," "How to Label Your Evergreens," "The Home Nursery," "How to Build a Pool—The Rock Garden," "Garden Lighting," "Evergreens for Window Boxes" and "Profits in Raising Christmas Trees."

The volume is 7x9½ inches, with a stout green cloth binding, and is printed in a large, legible type face. It contains 320 pages and 360 illustrations. Forty-five of these illustrations are in full color and represent an investment, it is said, of over $12,000. The price of $3.50 per copy is small for a book of this character and quality. Nurserymen, florists, landscape architects, park and cemetery officials, private planters, instructors and all others who have occasion to refer to any detail on the subject will undoubtedly welcome "Hill's Book of Evergreens," hundreds of copies of which were ordered in advance of printing. The book is dedicated to the late D. Hill, whose portrait appears as a frontispiece.

ROSES IN COLOR.

Unique in the scope of its text and the lavish use of color illustrations is "Roses of the World in Color," by J. Horace McFarland. This book, recently released by the Houghton Mifflin Co., offers to all who are interested in roses both a guide to varieties, with accurate color representations of practically all the old and new varieties dominating the rose world today, and a source of cultural data accumulated over a period of forty years. Seldom before have equal experience and facilities been so happily joined in a work priced so nominally as this—$3.75 per copy.

Into the Rose Annual published for its members by the American Rose Society has gone much of the information gleaned by Mr. McFarland in his comprehensive rose trials in the Breeze Hill Gardens. Through "Roses of the World in Color" these important data are offered to a wider audience. Of the thousands of varieties and species that have passed through his hands, Mr. McFarland has selected for comment here about 500 as those best suited to the widespread climatic range of American gardens. For each important member of this group there is a color plate, many being full-page size, while splendid half-tones are used for the others.

If the rose faces that greet one from so many pages of the book seem somewhat familiar to one who is in the habit of perusing several trade catalogues a season, they are none the less beautiful to observe again, compiled in a single volume. Prepared for various clients at the press of which the author is the head, these color plates are used by kind permission in this work. They are extremely accurate in their tones and represent a special technique developed by the McFarland firm.

For the sake of convenience, the author states, he has followed alphabetical arrangement rather than the usual arbitrary rose classification. However, segregated lists of the various types are given. The name of the originator and the distributor of each rose and the year of introduction are given in parentheses for each variety. Added are a glossary of the abbreviations used and a list of the individuals whose cooperation made the book possible. The descriptions are declared to be largely from the author's personal observation.

The opening section offers a brief survey of rose history. A succeeding section contains suggestions for growing roses, the hints being practical, meaty and encouraging. Next come 288 pages devoted to the varietal descriptions and portrayals. Besides the rose subjects, there are views of roses in gardens and parks. The book is substantially bound in cloth and is printed on a high grade of enameled stock.

ITALIAN ON ELM DISEASE.

An important addition to research on the Dutch elm disease is available in a book of 134 pages, well illustrated, in Italian, entitled "La Moria Dell'Olmo (Graphium Ulmi)," by Dr. Gabriele Goidanich, published by Ramo Editoriale degli Agricoltori, Rome, Italy, at the price of 8 lire.

The book is called to the attention of the American trade by Arturo Ansaloni, Bologna, Italy, through whose courtesy a copy has been received. He has supplied a short review of the book, as follows:

"Four years ago the author of this interesting book undertook in Bologna, in the heart of what may be called the most beautiful artificial elm forest of the world, the study of the Dutch elm disease, Graphium ulmi.

"In the past few years Dr. Goidanich has joined the experimental staff of the royal station of plant pathology at Rome, under the direction of the well known plant pathologist, Prof. L. Petri, and there he continued his studies on the same subject.

"Due to the great economical importance of the cultivation of elms in many provinces of northern Italy, the Italian government provided the necessary financial support so that the author could carry on successfully his researches all over the country. All regions, from the Alps down to Sicily, were visited by the author, and a rich bibliography, consisting of about 100 publications in several languages dealing with the subject, have been consulted and cited.

"The book, illustrated by over forty pictures and drawings, is divided into four parts: Description of the host, the parasite, the causes of the disease, and control measures.

"The part which interests most closely foresters, nurserymen and tree lovers is the one which deals with the indirect method of control. The author describes and illustrates the control measures adopted in Italy, which consist in replanting new and disease-resistant elms. In this connection the author points out and describes the Siberian elm, Ulmus pumila, as the only species which may in the best way substitute for the other elms subject to the attacks of the disease. He states that 'this new introduction has kept all hopes placed on it,' that 'it has the great advantage to yield leaves as food to cattle,' that 'the very rare cases of death on the Siberian elms were not due to Graphium ulmi' and that 'the Siberian elm is a very rapid grower of great adaptability to almost any soil and climate conditions.'"

THE new building of the Inter-State Nurseries, Hamburg, Ia., which will cover 26,000 square feet of floor space, is nearing completion.

THE state convention of fruit growers held at Bakersfield, Cal., last month, indorsed the passage of an act at the coming session of the legislature setting up grades and standards covering nursery stock, with the purpose of regulating the sale of quality material in the state. The subject was ably presented by James R. Crombie, Oakland, president of the California Association of Nurserymen, and by George P. Roeding, Jr., of the California Nursery Co., Niles.

MILTON NURSERY CO.
A. Miller & Sons
Milton, Oregon
Pioneer Nursery Pacific Northwest
Complete List of
General Nursery Stock
European White Birch (Betula alba) Branched, single leader, also clumps 3 to 5 leaders branched at ground.
Maples: Norway, Schwedler, Sugar, Sycamore, whips and branched. **Globe Norway,** top-grafted on Norway.
Locust, Globe-head, rapid grower.
Oaks, Red and Scarlet.
Fruit Tree and **Chinese Elm** seedlings.
Car lot accommodation for eastern points.
YOUR WANT LIST APPRECIATED.

A. McGILL & SON
FAIRVIEW, OREGON
Wholesale Only
Our usual line of quality nursery stock, including Shade and Flowering Ornamental Trees and Specialties, Fruit Tree Seedlings and Roses.
Grown Right and Packed Right
A card will bring our list of items that will make you some money.

?
The great question!
Where to get new and rare trees and shrubs at trade prices?
EASY ENOUGH!
Write today for list 3637.
W. B. CLARKE & CO.
San Jose, Calif.

ORENCO NURSERY CO.
Orenco, Oregon
Wholesale Growers
Fruit, Shade, Flowering Ornamental Trees, Fruit-tree Seedlings, Roses, Etc.
Very complete line of quality stock

CHINESE ELM SEEDLINGS
Thoroughly matured stock now ready for shipment.
CHINESE ELM SEED
Now booking orders for next spring's delivery.
WASHINGTON NURSERIES
Toppenish, Wash.

Tree Peonies and all other types
New Hybrid Lilacs, Evergreens and other Specialties.
The Cottage Gardens
Lansing, Mich.

PATENT CASE APPEALED.

In regard to the recent case wherein the Cole Nursery Co., Painesville, O., owner of plant patent No. 110 on Truehedge Columnberry (Berberis Thunbergii pluriflora erecta), sued John Youdath for infringement, this infringement was not allowed by a federal court. The Cole Nursery Co. has, therefore, decided to carry the case further and to appeal to a superior court. The case is expected to be heard within the next year.

The aforementioned court action has in no manner lessened the protection afforded by the patent to the Cole Nursery Co., and Truehedge Columnberry is being handled as formerly under the license features of the patent law, which prohibits asexual reproduction except by license from the patent owner.

The Truehedge Columnberry has gained prominence since its introduction in the fall of 1934, and it is recognized as one of the most sensational and successful plant introductions of recent years. A half-million plants have been sold to date, and it is predicted that the annual sale will reach at least 500,000 plants when sufficient stock has been produced to take care of the demand.

NORTH JERSEY COURSE ENDS.

A banquet was held at the Colonial Inn, Paterson, N. J., December 18, to mark the end of a highly successful nursery school, which, with sessions in the courthouse, Paterson, every Friday evening, had been in progress since last October.

The professors who delivered the lectures at the various sessions of the school, conducted under the auspices of the North Jersey Metropolitan Nurserymen's Association, were the guests of honor of the sixty-five residents of the county who took advantage of the course. County Agricultural Agent Harold E. Wettyen officiated as toastmaster.

Appreciation of the action of the nurserymen's association in sponsoring the course, of the work of the professors and of the coöperation of the board of freeholders and the county board of agriculture, through which the school was made possible, was expressed by the various speakers.

Another feature of the program was a presentation of the Colonial Inn revue.

The guests of honor at the banquet were: Dr. Richard P. White, of the plant pathology department; B. Blackburn, extension horticulturist; Dr. C. C. Hamilton, associate entomologist, and R. B. Farnham, extension floriculturist, all of the state agricultural experiment station; H. M. Biekart, associate professor of floriculture; F. G. Helyar, director of resident instruction, and Dr. J. S. Joffe, professor of soil technology, all of the college of agriculture of Rutgers University, and E. E. Evaul, agronomist of the soil conservation service.

EVERETT O. NORD, of the Upland Empire Nurseries, Boise, Idaho, recently planned and planted a memorial park for the Idaho Power Co., at Twin Falls, the largest private landscaping project in southern Idaho. Mr. Nord acts as recreational engineer for the United States forest service, doing all its landscaping and planning and developing camp grounds, scenic trails, etc., in that part of Idaho.

PACIFIC COAST NURSERY
1436 N. E. Second Ave.
PORTLAND, ORE.
Largest Fruit Tree Seedling Growers In America
We also grow all kinds of fruit trees, 1 or 2-year-old, but only for our regular seedling customers.
We accept 1 to 3-year contracts at this time for seedlings as well as fruit trees at a price you cannot afford to refuse.
Sample of seedlings or fruit trees upon request.
18 years' experience in Europe and 22 years' in America growing fruit trees and seedlings. References given if wanted.
JOHN HOLMASON, Prop.

Oregon-grown ROSEBUSHES
Send for List
PETERSON & DERING, Inc.
Wholesale Rose Growers
SCAPPOOSE, OREGON

WHOLESALE GROWERS
of a complete line of Nursery Stock including Fruit Tree Seedlings.
Lake's Shenandoah Nurseries
Shenandoah, Ia.

EUROPEAN HORSE-CHESTNUT SEED
1936 Crop, 20c per lb.
RED CEDAR, Northern
1936 Crop, 50c per lb.
GRAFTS MADE TO ORDER.
Copper-leaved Beech, Schwedler Maple, Flowering Crabs, Apple and Pear. Write for prices.
MATHEWS EGGERT NURSERY
342 Apple Ave. Muskegon, Mich.

GRAPEVINES
800,000 of the finest grapevines we ever grew await your order. **All the leading varieties** in 1 and 2-year size. Get our price list before placing order.
E. W. TOWNSEND & SONS NURSERIES
Salisbury, Maryland

Please Mention THE AMERICAN NURSERYMAN when writing advertisers

ANNUAL TABLE OF CONTENTS

While many subscribers to The American Nurseryman clip the plant notes and cultural articles for their file or scrapbook as each issue appears, some readers do not wish to mutilate their copies and have consequently asked if an annual index could be supplied, so that the valuable material of this type may be more easily available for later reference. Such a table of contents is supplied here for the 1936 issues.

No attempt has been made to index news material, meeting reports, etc., the interest in which is purely seasonal. The purpose is to avoid an unwieldy index while tabulating valuable plant data for the simplest accessibility.

While the table of contents on this page covers the entire year 1936, it is separated into two parts, because a volume comprises but six months, twelve issues. The issues in each volume are numbered consecutively from 1 to 12. The first figure in the table is that of the issue number in the volume designated, and the second figure, following the colon, is the page number.

If any readers prefer to have separate copies of this page, carrying only the table of contents with no printing on the reverse, to be inserted in binding annual volumes, such copies will be supplied on receipt of 10 cents to cover cost of mailing.

VOLUME LXIII.

January 1 through June 15, 1936.

Acer Saccharinum Wieri 1:2
Anemones, Desirable Species of 7:5 8:9
Annuals for the Rock Garden 9:7
Apple Trees, Hardy Stocks for 9:9
Apple Trees, Low-Headed 1:2
Apricots, Hardy 5:8
Azalea, Flame 4:2
Boysenberry 2:6
Buddleias for Late Bloom 9:6
Calcium Arsenate 5:8
Cankerworms Active 11:4
Cavity Treatment—Shell and Open Types 11:5
Ceratostigma and Roses 2:4
Chaste Trees 3:9
Chrysanthemums, Test for Hardiness 1:9
Cornus Kousa 11:2
Daphne Cneorum 12:2
Diseases, Note Unusual 2:4
Diseases of Nursery Stock 11:3
Elm Leaf Beetle 9:4
Evergreens, Growing Better 2:3
Evonymus Radicans Vegetus 2:2
Feeding Shade Trees in Nursery 7:7
Fruits, Promising New 8:7
Fruit Trees, Made-to-Order 4:3 6:16
Garden Furnishings 10:3
Germander as Dwarf Hedge 1:8
Golden Oak Scale 12:4
Ground Cover Plants 1:7 2:5
Halesia Carolina 6:2
Highway Beautification 5:5
Hydrangea Quercifolia 10:2
Iris Bloom, Succession of 12:3
Lace Vine, Propagating 12:9
Landscape Planning for Home Grounds 7:3
Larch Case-Bearer 11:6
Laying Out a Flower Garden 9:5
Lilac Marechal Foch 1:11
Magnolia Stellata 5:2
Malus Sieboldii 8:2
Osage Orange Hedge 6:11
Parsley Family, Ornamentals of the 12:5
Peach Borers, Treat for 9:11
Peat Moss, The Value of 2:11
Peonies, Pure Yellow 1:6
Plants, Some Confused 11:7
Plants for the Garden, Native 3:7 4:7 5:7 6:9
Poppies, Oriental 6:5
Propagating, Hints on 1:6
Pruning Ornamental Trees and Shrubs 9:3 10:9 12:7
Prunus Subhirtella 10:11
Rhododendron Lace Bug 11:8
Seed Practices in Nursery 11:9
Sentinel Plants 10:7
Shadbushes 12:9
Soil Properties and Management 5:3
Spiræa Trichocarpa 9:2
Spraying in Fruit Tree Nursery 10:5
Spruce Galls, Spray for 9:12
Summer Planting 8:8
Tamarix, Late-Blooming 8:6
Taxus Cuspidata 3:2
Tent Caterpillar 8:15
Unusual Shrubs 1:10
Viburnum Tomentosum Sterile 7:2
Walnut, Japanese 10:8
Willow Leaf Beetle 9:13
Winter Injury, Causes and Prevention of 8:3
Winter Injury on Raspberries 9:13
"X" Disease, Cutting Checks 1:5

VOLUME LXIV.

July 1 to December 15, 1936.

A. A. N. Convention at Dallas 3:3
Acer Ginnala 8:2
Apple Trees, Sclerotium Disease on 5:7
Arbor-vitæ, Our Native 8:11
Arbutus, Propagating Trailing 5:15
Azaleas, Chlorosis in 4:14
Autumn Attractions 9:3
Banding, Danger in 7:10
Boxwood Diseases 8:2
Cavity Repair, The Solid Type of 2:7
Cherry, Cornelian 2:6
Chestnut Blight, Induced Immunity to 9:5
Chrysanthemum Leaf Spot 12:9
Chrysanthemums, Test Outdoor 10:12
Clematis Henryi 11:2
Cost Finding in the Nursery 7:5
Cotinus Coggygria Purpureus 3:2
Crab Grass, Eradicating 8:12
Cuttings, Expediting Rooting of 5:14
Cytisus Ardoinii 11:4
Deciduous Tree Grades 5:8
Diseases, Shade Tree 10:7
Elsholtzia Stauntoni 7:2
Fertilizers and Their Uses 6:7
Fertilizers for Ornamental Plants 10:3 11:5
Fertilization of Shade Trees 7:9 8:9
Fothergilla Major 2:4
Fruits in Drought Area 9:8
Fruit Tree Stocks 7:8
Gentians, Glorious 2:5
Golden Gate Park 10:6
Grape, Hardy Seedless 2:6
Hackberry as Shade Tree 11:4
Hardy Perennials, Desirable 3:12
Hardy Plants for Shade 1:5
Heucheras 3:16
Highway Plantings 4:10
Hydrangea Petiolaris 4:2
Ilex Aquifolium 12:2
Insects Follow Drought 5:2
Landscaping at Dallas Exposition 2:3
Lilacs, Leading 6:4
Mice, Protect Trees from 8:8
Narrow Upright Trees 5:3
Ornamentals of Recent Introduction 8:5
Outdoor Living Rooms by Night (Garden Lighting) 1:3
Peach Blight, Spray for 11:12
Pecan Rosette, Control 10:8
Pentstemons, The Better 7:7 8:7 9:7
Plant Experiences of 1936 ..... 10:9 11:7 12:7
Plants for Paved Walks 4:7 5:5 6:5
Plants of Interest, New 8:12
Polemonium Carneum 2:9
Poppies, Oriental 3:17
Propagation by Stem Cuttings 8:16
Quinces, Japanese 2:4
Raspberries, Three New 12:8
Recommended Plants 9:10
Red Spider, Glue Dust for 12:8
Roadsides—The Front Yard of Nation 4:11
Robinia Pseudacacia 9:2
Rock Gardens 4:3
Ruta Patavina 6:8
Shrubs Worth Trial, Uncommon 4:5
Stewartia Pentagyna 10:2
Stock Replacement Plan 9:4
Syringa Japonica 1:2
Vitex Macrophylla 5:2
Winter Injury and Plant Hardiness 1:7
Winter Injury Appears 8:8
Winter Protection (Laurel, box, rhododendron) 12:6

20,000 **CHERRY, Montmorency and Early Richmond,** 2-year, XX and 1⅛ inch.
5,000 **SPIRÆA, Vanhouttei,** 3 to 4 feet and 4 to 5 feet.
25,000 **ELMS, American, Vase** and **Moline,** transplanted, up to 4 inches.
10,000 **MAPLE, Norway,** transplanted up to 2½ inches.
3,000 **ARBOR-VITÆ, Pyramidalis,** up to 8 feet.
400 **PINE, Mugho,** from 2 to 4 feet.
1,000 **SPRUCE, Norway,** sheared, none better, 3 to 5 feet.
600 **JUNIPER, Pfitzer's,** 5 to 8 feet spread, beauties.
3,000 **ARBOR-VITÆ, American,** and **RETINOSPORAS,** 4 to 7 feet.

Send for list on many other items.

C. M. HOBBS & SONS, Inc.
Bridgeport, Indiana
Largest Nursery in Indiana. Established 1875.

Twenty Million Strawberry Plants
Complete list of all the new varieties.
We furnish packing out service for nurserymen and seedsmen.
Write for wholesale price list.
E. W. TOWNSEND & SONS NURSERIES
Salisbury, Maryland

STRAWBERRIES
Let us quote you on your requirements for spring 1937. 100 acres of plants grown under irrigation. All standard varieties.
STAHELIN'S NURSERY
Bridgman, Mich.

LATHAM RASPBERRIES
CHINESE ELM Hardy Strain
Northern Apple Seedlings
ANDREWS NURSERY
FARIBAULT, MINN.

Small Fruit Plants
Evergreens — Shrubs
Lining-out Stock
Send for Complete Trade List
SCARFF'S NURSERIES
New Carlisle, O.

GRAPEVINES, CURRANTS
GOOSEBERRIES and BERRY PLANTS
All leading varieties, including Portland, Fredonia, Sheridan, Ontario and Caco grapes.
Specializing in the growing of these items for forty-six years. WE KNOW HOW. Let us quote on your requirements.
THE F. E. SCHIFFERLI & SON NURSERIES
FREDONIA, NEW YORK

GRAPEVINES,
PEACH and SHADE TREES,
BLACKBERRIES,
SHRUBS
WILLOWBEND NURSERY
PERRY, OHIO

For list of
BOOKS ON TRADE SUBJECTS
Write to
AMERICAN NURSERYMAN

CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in The American Nurseryman.]

Shenandoah Nurseries, Shenandoah, Ia.—Printed in green on pink comes the wholesale trade list for winter and spring dated December 1. In order, are listed fruit trees, fruit tree seedlings, deciduous tree and ornamental seedlings, ornamental and shade trees, ornamental shrubs, climbing vines, hedging, evergreens and, finally, various types of roses, all nursery stock. Peonies and bulbs are also offered, and nurserymen's supplies.

Herbst Bros., New York.—A 28-page booklet contains lists of seeds of trees, shrubs, flowers and vegetables, fertilizers, horticultural books and lawn mixtures. Among flowers are wilt-resistant asters, Japanese-grown cyclamens and new varieties of perennials. The firm is agent for T. Sakata & Co., Japan.

Atlantic Nurseries, Inc., Berlin, Md.—Peonies, dahlias and gladioli are included in the Atlantic catalogue, given over mostly to nursery material—deciduous trees, shrubs and vines; vines and climbers, evergreens, broad-leaved evergreens, lining-out evergreens and hardwood cuttings.

Orenco Nursery Co., Orenco, Ore.—With several views of the company's own plantings, the wholesale price list offers fruit trees, stock of small fruits and nuts, ornamentals, including coniferous and deciduous material; broad-leaved evergreens, hedge plants, vines, roses, peonies and hardy perennials.

The Willis Nursery Co., Ottawa, Kan.—Dated December 7 is the wholesale price list, winter, 1936, bound in a gay yellow paper cover. Shrubs, shade trees, evergreens, broad-leaved evergreens, roses, also fruit trees and seedlings are among the offerings in strictly nursery material. Perennials, peonies, lilies and spring bulbs are also included in the lists.

Upton Gardens, Colorado Springs, Colo.—"Rocky Mountain Rarities from Colorado," a green-covered booklet containing a number of alluring half-tones, offers both alpines and material from high dry plains less elevated than the home of the true alpines. Both plants and seeds are supplied, and there are seeds and trees of Colorado conifers.

National Seed & Importing Co., Omaha, Neb.—"Rocenka—1937," said to be the only seed catalogue in Bohemian published in this country, contains eighty-eight pages and many good half-tones. The cover shows godetias in color. Vegetable and flower seeds, roses, other shrubs, shade trees, fruit stock and garden supplies are offered.

Glen Saint Mary Nurseries Co., Glen Saint Mary, Fla.—Showing trees, fruits and flowers in natural colors, the Glen Saint Mary catalogue holds also a magnificent center spread of a planting of azaleas in color. Besides, there are many, many excellent half-tones printed on a fine smooth paper. The stock offered is primarily for southern planting, even to bananas. Magnolias, azaleas, camellias, palms and cycads, and bamboos are offered, also roses, including the new Texas Centennial and Australian varieties. The last page lists conifers, with pictures of some in color. There is an index, and also there is a table of planting distances for trees.

Middlepen Plantation, Orangeburg, S. C.—Almost half of this little folder is of interesting illustrations—in colors and in black and white. Gladioli, daffodils, irises, other bulbous subjects like clivias, lycoris and ornithogalums, roses and perennial plants are offered.

Atwood Rose Nursery, Tyler, Tex.—A folder with three beautiful roses—Etoile de Hollande, Edith Nellie Perkins and Golden Dawn—shown in natural color. Listed are bush, polyantha and climbing roses.

Hoodacres Originating Gardens, Troutdale, Ore.—"Delphinium Information Book" is a neat booklet bound in blue paper, the issue combining a catalogue of delphiniums and Japanese irises with considerable informative material on the delphinium. There are pictures in color of the individual flowers of some of the Hoodacres delphiniums, also half-tones of the flowers and plantings.

Henry A. Dreer, Philadelphia. — Containing ninety-six numbered pages, plus four devoted to a selection of holiday plants and a special list of dormant roses, Dreer's complete wholesale catalogue for florists is liberally illustrated—in black and white. In flower seeds are listed, first, novelties and specialties, then annuals and perennials. Besides, there are bulbs, dahlias, perennial plants, hardy shrubs, climbers, garden and greenhouse plants, vegetable seeds, lawn grass mixtures and sundries. Roses and hydrangeas are each given separate listings. Both covers, of green paper, carry pictures of a double fringed petunia, and there is an index.

Lissadell, Sligo, Irish Free State.—Looking over the Lissadell trade list of alpine and herbaceous plants, the reader discovers red underscorings distinguishing particularly promising novelties. There are two lists, each alphabetized, one being of alpines, the other of herbaceous plants.

W. B. Clarke & Co., San Jose, Cal.—At the front of the booklet that makes up the wholesale price list for 1936-1937 are listed new and scarce items, included in the general priced lists farther on in the pamphlet. Handled are conifers, broad-leaved evergreens, flowering fruit trees, deciduous trees and shrubs, lilacs, climbers and wisterias. A separate sheet suggests stock for eastern shipment.

. . . . . *a good supply of*
SOUR and SWEET CHERRIES
APPLE — PEACH — PEAR
ORNAMENTALS — ROSES
FRUIT TREE SEEDLINGS
CHINESE ELM SEEDLINGS
DECIDUOUS SEEDLINGS
Write for **FALL TRADE LIST.**
Will appreciate your **WANT LIST and INQUIRIES.**
MOUNT ARBOR NURSERIES
E. S. Welch, Pres. Shenandoah, Iowa
"One of America's Foremost Nurseries"

Evergreens, Broad-leaved Evergreens, Deciduous and Ornamental Trees, Flowering Shrubs, Barberry, Privet, Hardy Perennials and Rock Plants - - Fruit Trees and Small Fruits - - Lining-out Stock.
PEACH TREES
A fine general line, including a large supply of **Elberta, Golden Jubilee** and **South Haven.**
Write for quotations and our Wholesale Trade List.
The WESTMINSTER NURSERY
Established 1893 Westminster, Maryland

PEACH TREES
Ilex Crenata
Maples Pin Oaks
Quality Line Priced to Sell
HOWARD-HICKORY CO.
Hickory, N. C.

PEACH PITS
OUR PITS COMPARE FAVORABLY WITH THE BEST
HOGANSVILLE NURSERIES
Hogansville, Georgia

Apple and Peach Trees
Write for prices. Large acreage of nursery stock. Will appreciate your want list.
SOUTHERN NURSERY CO.
Winchester, Tenn.

JEWELL Wholesale
Hardy Minnesota-grown Nursery Stock and Liners
THE JEWELL NURSERY CO.
POUCH N
Lake City, Minnesota

START LANDSCAPING FOR FAIR.

The half-million dollar landscaping program of the 1939 Golden Gate International Exposition, to be held at San Francisco, Cal., was officially launched on the ninetieth birthday anniversary of John McLaren, creator of Golden Gate park, San Francisco, and advisor to the world's fair horticultural bureau.

"As San Francisco pays tribute on December 19 to John McLaren," said Leland W. Cutler, president of the world's fair, "the creator of the magnificent gardens of the 1915 Panama-Pacific International Exposition and, forty-two years ago, of the landscaping of the 1894 midwinter fair in Golden Gate park, we should be glad to do our part toward making the floral beauty of our third exposition surpass that of all its predecessors."

Initial opportunity for San Francisco and the communities of the bay region to participate in the 1939 exposition landscaping program came with the announcement by J. L. Girod, head of the exposition's bureau of horticulture, that donations of trees and shrubs are being requested by the procurement division. Stanford University, Palo Alto, has turned over sixty giant oaks, some thirty feet in height, to the exposition. The University of California, Berkeley, has already pledged its aid in donating trees and shrubs. Berkeley, Palo Alto and other communities on the peninsula and east bay have offered their support. Evergreen trees and shrubs are especially needed, but all offers of material will be welcomed.

Work is now progressing at the exposition nurseries in Balboa and Golden Gate parks in San Francisco, with thousands of plants being prepared for transplanting to Exposition island. As a prologue to the 2-year exposition landscaping project, John McLaren and Mr. Girod inspected the boxing of a Cryptomeria japonica.

Donations of plants and trees may be offered to the following: J. L. Girod, bureau of horticulture, Golden Gate International Exposition, 585 Bush street, San Francisco; Howard Gilkey, 3147 Sheffield avenue, Oakland, and Henry R. Sander, Jr., 465 Lowell avenue, Palo Alto.

CLASSIFIED ADVERTISING

Osage Orange hedge (Maclura), new-crop seed. May import Italian Black Locust seed if demand justifies.
Ray Wickliffe, Seneca, Kan.

Northern Tree Seeds, direct from the collector. Hemlock, Balsam Fir, Red Spruce. Established 11 years.
K. J. Braden, Gray, Me.

My new Seed List has been posted to customers. Copies are still available for those interested.
Manager, Lissadell, Sligo, Irish Free State.

For Sale, on terms, nursery and florists' business on highway 60. Extensive good territory. Practically new 8-room modern house. Ill health reason for selling. For particulars, diagrama, etc., wire or write
Wayside Flower Gardens, Mountain Grove, Mo.

Evergreen Seeds.
Our seeds are gathered only from select areas in the Colorado Rockies where color is brightest.

	¼ lb.	1 lb.
Picea Pungens (Blue Spruce)	$1.00	$3.00
Pseudotsuga Douglasii (Douglas Fir)	1.00	3.00
Juniperus Scopulorum (R. M. Red Cedar), berries	.50	1.00
Juniperus Scopulorum, clean seed, stratified	2.00	6.00

Write for special prices in large lots. Supply limited some kinds. Other native seeds, including Caragana, Russian Olive, Honey Locust, Green Ash, Hackberry, etc., gathered on order if not on hand.
Kinghorn Nursery, Fort Collins, Colo.

OREGON SHIPMENTS.

A fine crop of rose plants this year is reported by E. Dering, of Peterson & Dering, Scappoose, Ore. Five cars have been shipped to eastern points, and another five will be dispatched after the first of the year. After an unusually dry fall, adequate rain came at the end of November, so that by the middle of the following month, with sufficiently moist soil, all autumn nursery products had been dug and most of them shipped.

"I believe that No. 1 roses are scarcer in this district this year," states Mr. Dering, "However, there is an ample supply of the lighter grades. Fruit tree seedlings, I understand, are in no great surplus, although there are enough to take care of orders on hand. These two items compose the bulk of the stock grown in Oregon for eastern distribution. Norway maple and birch trees are scarce, and growers of these items are unable to fill inquiries received. Narcissus bulb growers had a fine year and, I understand, shipped something in the neighborhood of seventy-five cars from Oregon and Washington this year. About thirty carloads of gladiolus bulbs are going out from this district."

YULE PARTY OF B. & A. STAFF.

The annual Christmas party and get-together of the employees at the Rutherford and Clifton, N. J., nurseries of Bobbink & Atkins was held this year on Wednesday, December 23, at the Penguin Club, Allwood Traffic circle, Clifton, N. J. George C. White, general manager, welcomed the guests and spoke optimistically of the prospects of the nursery business in general, judging from the good business of this past fall, and predicted a prosperous spring season.

The dinner proved to be a most enjoyable affair, and those present, after a turkey dinner served with all the trimmings and even a little more for good measure, spent a merry time dancing to some good music, as the girls of the office staff and others were also present. It was several hours later when the party broke up, everyone feeling that they had participated in a fine entertainment.

HOLIDAY GREETINGS.

From Clark E. Gardner, president of the Gardner Nursery Co., Osage, Ia., came greetings in the form of a tray of winter-blooming bulbs. Each of the hyacinth, tulip and giant crocus bulbs is rooted in bulb peat, wrapped in wax paper and held upright in a paper wrapper. A little water poured into watering tubes once a week brings them into flower. This patented package should make home flowering of large bulbs easy and certain, adding to winter enjoyment of flowers.

From Stark Bros. Nurseries & Orchards Co., Louisiana, Mo., came the annual holiday greetings—a box of Delicious apples—which are doubly enjoyable.

HELP WANTED

Competent propagator to handle propagation for medium size middle west nursery. Also shipping clerk who can wait on retail trade. State experience and salary desired. Address No. 50 c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

INDEX TO ADVERTISERS

American Florist Supply Co. 19
Andrews Nursery 17
Atkins & Durbrow 20
Bartlett Mfg. Co. 20
Bobbink & Atkins 19
Braden, K. J. 18
Brimfield Gardens Nursery 13
Burr & Co., C. R. 13
Canterbury 13
Chase Bag Co. 20
Chase Co., Benjamin 19
Clarke & Co., W. B. 15
Cloverset Flower Farm 20
Conigisky, B. F. 19
Cottage Gardens 15
Dixie Rose Nursery 13
Dreer, Henry A. 19
Egyptian Nursery & Landscape Co. 19
Evergreen Nursery Co. 13
Herbst Bros. 20
Hill Nursery Co., D. 13
Hobbs & Sons, C. M. 17
Hogansville Nurseries 17
Houston Blueberry Nursery 11
Howard-Hickory Co. 17
Jackson & Perkins Co. 13
Jewell Nursery Co. 17
Kinghorn Nursery 18
Lang Rose Nursery 13
Leonard & Son, A. M. 20
Lissadell 18
Loewith, Inc., Julius 20
Lovett, Lester C. 13
Mathews Eggert Nursery 15
McGill & Son, A. 15
Milton Nursery Co. 11-15
Mount Arbor Nurseries 17
Oronco Nursery Co. 15
Pacific Coast Nursery 15
Peterson & Dering, Inc. 15
Pfund Bell Nursery Co. 19
Pitts Studios 19
Princeton Nurseries 13
Process Color Printing Co. 19
Scarff's Nurseries 17
Schifferli & Son Nurseries, F. E. 17
Shenandoah Nurseries 15
Skinner & Co., C. W. 19
Southern Nursery Co. 17
Stahelin's Nursery 17
Storrs & Harrison Co. 11
Townsend & Sons Nurseries, E. W. 13-15-17
Troup Nursery Co. 13
Washington Nurseries 15
Westminster Nursery Co. 17
WhiteShowers, Inc. 19
Wickliffe, Ray 18
Willowbend Nursery 17
Wilson & Co., Inc., C. E. 13
Wisconsin Moss Co. 19

TAXUS
CUSPIDATA CAPITATA

We have a fine stock of plants for hedging or specimens, which will make a good showing immediately. Sizes, 2 to 8 ft.

HEMLOCKS
Tsuga Canadensis
Sizes, 5 to 6 ft. and 6 to 7 ft.

Tsuga Caroliniana
Sizes, 5 to 6 ft. and 6 to 7 ft.

Both choice offerings, quickly growing into serviceable hedges.

FOR FORCING
We offer Lilacs in pots, grafted Hybrid Rhododendrons, Dicentra Spectabilis and other forcing material.

Write us a list of your requirements and we will quote you by return mail.

BOBBINK & ATKINS
Rutherford, N. J.

PLATE BOOKS
Business is coming back!
You will need compact folders, plate books, etc., to help in your selling campaign. Start using our colored photographs. Write for information.
B. F. CONIGISKY
Nurserymen's Service
211 Hamilton St. Peoria, Ill.

PRINTS, MAPS and FOLIOS
PLATE BOOKS
Process Color Printing Co.
701 Searle Bldg., Rochester, N. Y.

CATALOGUE CUTS
SOLD or RENTED
Illustrate your catalogue or circulars at low cost with our high-grade black or color cuts of flowers, shrubs and vegetables.
WRITE FOR FREE CATALOGUE AND PRICES TODAY.
THE PITTS STUDIOS
154 East Ave. Rochester, N. Y.

Overhead Irrigation
It gives you year-round protection against drought and frost. Costs little. Easy to install. Send today for FREE BOOK.
FREE BOOK
Costs Little!
WHITESHOWERS, Inc.
6457 Dubois St., Detroit, Mich.

SPHAGNUM • MOSS •
Carlots or less, write
WISCONSIN MOSS CO.
Wisconsin Rapids, Wis.

WANTED
100,000 Amoor River North Privet cuttings. 2,000 each: Mahoney Grape liners, American Sweet Chestnut seedlings; Meyer, Cutler, Cannart, Virginiana Glauca, Hill's Dundee Junipers, Berckmans and Pyramidalis Arbor-vitæ liners. A few pounds of Arbor-vitæ, Juniper, Fir, Spruce and Pine seeds for spring planting.
SURPLUS—2-yr. Apple. Apple and Pear scion wood and grafts.
Egyptian Nursery & Landscape Co., Farina, Ill.

DREER'S
1937 Wholesale Catalogue
for Nurserymen and Florists

Every up-to-date nurseryman and florist will want to have a copy of this interesting 96-page book. It contains valuable information on the outstanding new varieties—Flower Seeds, Bulbs, Gladioli, Dahlias, Cannas, Roses, Perennial Plants, Hydrangeas, Shrubs, Climbers, Garden and Greenhouse Plants. Also Vegetable Seeds, Lawn Grass and Sundries. It will be mailed free to anyone in the trade.

HENRY A. DREER, Philadelphia, Pa.

ROADSIDES
THE FRONT YARD OF THE NATION
By J. M. Bennett
Superintendent of Parks and Forestry
Board of County Road Commissioners, Wayne County, Mich.

Beautification of highways by the planting of trees, shrubs, vines and flowering plants has been immensely stimulated by government appropriations for relief projects in recent years. Such work deserves the support of everyone interested in horticulture for its own merit and for the interest it engenders in the motoring public in such plant materials for private landscape use. Here is a book explaining what is being done and how. You should keep posted yourself and be ready to help your community in such projects.

$3.00 per copy

AMERICAN NURSERYMAN
508 S. Dearborn St., CHICAGO, ILL.

LABELS FOR NURSERYMEN
THE BENJAMIN CHASE COMPANY
DERRY, N. H.

Protect Your Stock Against Future Drought with
SKINNER OVERHEAD
IRRIGATION
40 years' experience—your guarantee of satisfaction
Overhead irrigation supplies now at greatly reduced prices
Write for free literature
C. W. SKINNER & CO.
Newfield – New Jersey

SUPPLIES
Budding Strips
Nursery Tools
Moss
Equipment
Sundries
In Stock

CATALOGUE FREE
Write for it.
American Florist Supply Co.
1335 W. Randolph St. CHICAGO

WE WILL BUY
TREES. Hawthorns, Flowering Crabs, Redbud, White and Green Ash, Black Walnut, Sycamore, Prunus, all varieties; Oaks, all varieties, and Chinese Elms.

SHRUBS. Amelanchier, Amorpha, Aronia, Cornus, all varieties; Corylus, Evonymus, all varieties; A. R. Privet, Viburnums, all varieties; Hydrangeas, A.G. and P.G.

VINES. Vinca minor, Scarlet Trumpet, Bittersweet, Virginia Creeper, Trumpet, Hall's Honeysuckle. Also Rosa setigera, lucida, humilis, Wichuraiana, palustris.
Send your offerings by return mail.
PFUND BELL NURSERY CO.
Elmhurst, Illinois

HEALTHY ROOT DEVELOPMENT

YOU can get better results with Evergreens, Shrubs, and Perennials of all sorts, if they are planted in a properly conditioned soil.

Dig in G.P.M. Peat Moss before you do any planting. It readily makes humus, keeps the soil well aerated at all times, and stores up moisture and plant food. It promotes vigorous root growth and luxuriant top growth.

G.P.M. Peat Moss comes in pressure packed bales to assure you more peat substance for your money. The "green" bale head distinguishes it from inferior grades. Write today for quantity prices and free literature. Address Dept. AM-21.

PEAT GPM MOSS

ATKINS & DURBROW
165-M John St., New York, N. Y.
1524 South Western Ave. Chicago, Ill. — 177 Milk Street Boston, Mass.

WE OFFER SUBJECT UNSOLD
Immediate Delivery

BLACK LOCUST SEED
JAPANESE PEAR SEED
CHINESE PEAR SEED
WHITE PINE SEED

Specializing in Imported Tree Seeds

JULIUS LOEWITH, INC.
120 East 16th St., New York, N. Y.

Up-to-date information on germinating

TREE & SHRUB SEEDS

Dr. L. C. Chadwick's articles on "Improved Practices in Propagation by Seed," reprinted from American Nurseryman.

Price 25c (postpaid)

HERBST BROTHERS
92 Warren St. New York, N. Y.

Write for free Tree and Shrub Seed Catalogue containing flower and vegetable seeds attractively priced.

PRUNE and TREAT with Bartlett Equipment

Compound Lever Tree Pruners, Pole Saws, Cross Cut Saws and Tree Surgeons' Supplies. Bark Scrapers, Wound Dressing, Grafting Wax and Tools, Tree Bracing Supplies, Tree Paint.

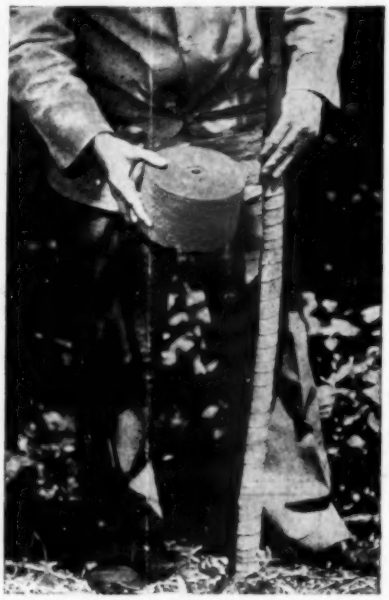
Write for free illustrated catalogue showing complete line.

Bartlett Manufacturing Co.
3017 E. Grand Blvd. Detroit, Michigan

NURSERY TOOLS

Nursery Spades, Kunde Knives and Pruning Shears, Budding and Grafting Supplies. Free 88-page Catalogue.

A. M. LEONARD & SON
Piqua - Ohio



CHASE SAXOLIN DUPLEX CRINKLED

WATERPROOF KRAFT

Spiral Wrap

For newly planted trees, Spiral Wrap in narrow width rolls helps your stock get off to a healthy growth.

Serves as a protection against sun scald and insect attack.

Provides security against the elements, severe frost and cold and the ravages of rabbits and other rodents.

Adjusts itself automatically to the contour of the tree with velvety wrapping smoothness. Prevents loss of moisture. Surface sealed with sufficient porosity to admit air.

Spiral Wrap gives complete coverage, perfect balance and flexibility . . . exerts an even pressure and permits expansion with the growth.

For general nursery use, CD-375 Saxolin Duplex Crinkled Waterproof Kraft is supplied in convenient size rolls of 200 yards, all standard widths . . . 36", 40", 48", 54" and 60" or cut into sheets of desired size, which saves time and eliminates waste.

Write for Samples and Prices

CHASE BAG CO.
Department of Specialties • • Cleveland, Ohio

GET READY NOW

FOR A BIG SPRING AND SUMMER BUSINESS

Plan to Use

CLOVERSET POTS

FOR YOUR ROSES, PERENNIALS, VINES AND SMALL SHRUBS

MORE PROFIT FOR YOU
Brings your business up to date

Write for illustrated circulars and full particulars.

CLOVERSET FLOWER FARM

105th Street and Broadway, Kansas City, Missouri